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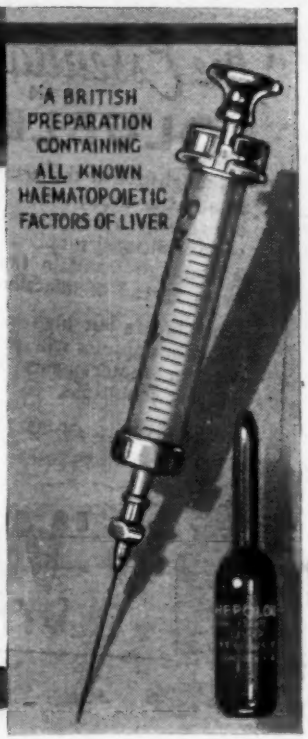

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J.A.M.A., May 25, 1940, 2090.

In a short report published in the same journal twelve months later the authors state that they found the ' Prostigmin ' test very reliable. Four of their patients responded by menstruating within 48 hours of the last ' Prostigmin ' injection. Of the three who did not respond, two were definitely pregnant. One could not be followed up. One patient gave a positive reaction, when she was not pregnant, but a few months later pregnancy occurred and she did not respond to the test. *J.A.M.A.*, May 17, 1941, 2335.

AFFECTIONS OF THE CORNEA

Large doses of ' Redoxon ' given intravenously were employed to accelerate the metabolism of the cornea and assist in the healing of local inflammatory lesions. Cases on which this treatment was employed consisted of corneal ulcer, keratitis, scleritis, and a case of seborrhœic dermatitis with keratitis and corneal ulceration of both eyes. Treatment consisted of intravenous injections of 500 mg. ' Redoxon ' given every alternate day and in some cases was continued by the oral administration of ' Redoxon ' tablets. The treatment produced considerable improvement.

Brit. J. of Ophthal., June, 1941, 286.

RAPID WOUND HEALING

The important role played by ascorbic acid in wound healing and its value in bringing about rapid improvement in gingivitis prompted the authors to investigate the effects of ' Redoxon ' vitamin C in the healing of wounds following tooth extraction. The results obtained by its use for the first case " were so dramatic that it was decided to apply the method in a number of cases " to confirm the first impression. Eight cases were treated and the most striking features were the rapid healing of gum tissue and, what was even more impressive, the rapid absorption of the alveolar bone margins. In four cases not previously treated with ascorbic acid, where persistent bleeding after extraction was present, a dose of 500 mg. vitamin C had a marked effect in arresting hæmorrhage.

Brit. Dent. Jour., Jan. 1, 1942, p. 6.

NEO-NATAL HÆMORRHAGE

An attempt was made to determine the effectiveness, particularly in infants, of parenteral vitamin K therapy administered to pregnant women before the onset of, and during labour, in ascertaining its effects on the prothrombin level of the blood of pregnant women and newborn infants. The experiment showed that the value of vitamin K is most effectively obtained if given during labour and that if treatment is terminated several days previously, the prothrombin level of the infant is not affected. If delivery does not take place within a few hours after the injection it would appear desirable to repeat the administration shortly before delivery. *Amer. Jour. Obstet. & Gyn.*, 1941, 42, 398.

INTRAVENOUS USE OF VITAMIN K

The cases in which intravenous administration of vitamin K is indicated are found to fall into three main groups : (1) Cases in which the preparation cannot be given orally. (2) Cases in which the vitamin is poorly absorbed from the gastro-intestinal tract. (3) Cases in which the response of a damaged liver to vitamin K is used as a measure of hepatic function. ' Synkavit ' ' Roche ' was among the preparations tried. It was given intravenously and was found to be of definite clinical value. In certain cases showing a limited response to the early administration of vitamin K, subsequent intravenous therapy was followed by a dramatic improvement in the clinical condition of the patient. No toxic effects were observed.

J.A.M.A., *Aug.* 9, 1941, 432–435.

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ORIGINAL ARTICLES

PERITONEOSCOPY

A REPORT BASED ON 125 CASES

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ENDOSCOPIC examination of the peritoneal cavity after inflation with air was first considered as a means of diagnosis as long ago as 1901, and sporadic attempts to widen the scope of its practicability have been made from time to time since then. Until recently these attempts have been abortive, but as a result of improvements in the type of instrument used it is now becoming a recognised aid in the diagnosis of many abdominal conditions in America.

The first attempts were made in Germany by Kelling (1902), and in Sweden by Jacobæus (1910), while in 1925 Nadeau and Kampmeier published a full account of the literature to that date. The modern stimulus to the use of the peritoneoscope derives largely from the work of Ruddock, who gave his first account of it in 1934, and a fuller report based on 500 cases in 1937; his latest figures show that he has used the instrument in 1500 cases (discussion on paper by Robinson and Fiske 1941). His instrument is the one which has found general acceptance today, and has been shown to be safe in competent hands and to give reliable results. Since 1937, thirty-six articles by twenty-nine authors have appeared in eight different countries (U.S.A. 25, Argentine 3, U.S.S.R. 3, Cuba, Czecho-Slovakia, Germany, Lithuania and Mexico, 1 each). Starr and Frank (1941) have lately published a collective review of experience gained in America up to date. The British Empire has been particularly conservative in adopting the method, there being only one reference to its use, on which occasion a cystoscope was employed (Short 1924).

THE PERITONEOSCOPE IN USE

Our own interest in the subject was aroused by the paper of Ruddock in 1937. In the first instance the Genito-Urinary Manufacturing Company loaned an instrument with a specially made sheath, in which the optical and lighting system from a cystoscope was used; since this gave promising results, a complete instrument similar to that devised by Ruddock was manufactured.

This consists of a sheath lined by bakelite, 10 mm. in diameter, with a lateral inlet for admitting air; a blunt pointed trocar for introduction of the sheath; a collar; and a telescope which carries the lamp. When the trocar is withdrawn, the collar and the telescope are inserted so that an air-tight connexion is made. The telescope has an indirect-vision optical system, giving a wide field directed obliquely forwards with slight magnification. A suction tube is provided for withdrawing ascitic fluid, and additional instruments are available for taking specimens for biopsy from solid organs, by means of a diathermy current.

The following observations are based on the experience of 125 examinations carried out during the last 3¼ years. As commonly happens with a new method, results in some early cases were inconclusive, and increasing practice in the use of the instrument gave more valuable and reliable information. Ruddock goes so far as to say: "I don't think a man learns much until he has done about 200," but we have found previous experience with the cystoscope, or more particularly with the thoracoscope, of great value. We have been rather disappointed in attempts to obtain specimens for biopsy, and in this series have only done so in 8 cases; in some of these the specimens were too small and the results of microscopic examination inconclusive. Modifications in the apparatus are now being made which will permit us to obtain larger specimens under better vision. We have attempted no operative procedures apart from biopsies, but other workers report on the use of the method for the division of adhesions (Jones 1940) and for sterilisation by means of fulguration of the fallopian tubes (Power and Barnes 1941); the most recent addition is a photographic attachment (Horan and Eddy 1941).

TECHNIQUE

The operation, which is undertaken with full aseptic technique in an operating theatre which can be darkened, may be carried out under local or general anæsthesia. In our series, 95 were undertaken under local, 29 under general and 1 under spinal anæsthesia. General anæsthesia is employed if there is a strong probability that open operation will follow. It has been our custom, as a routine, to insert the instrument in the midline a little below the umbilicus; this situation is centrally placed for reaching the limits of the peritoneal cavity, and, unless there has been a previous operation through an incision in this area, adhesions are not likely to be encountered, and no large blood-vessels are liable to injury. If any other site is chosen, the region of the larger blood-vessels of the abdominal wall must be avoided. When local anæsthesia is to be employed an injection of morphia is given beforehand, and an area about 2 in. in diameter anæsthetised, some of the local anæsthetic being injected into the rectus sheath on each side. The skin is nicked with a scalpel, and the pneumoperitoneum needle inserted. It is usually easy to determine when the needle is in the peritoneal cavity, because it can then be freely rotated about its point of insertion; if this freedom of movement cannot be obtained either the needle is not in the correct place or there are adhesions obstructing it, and an attempt should be made elsewhere; but air should on no account be injected unless the needle moves freely. Air is injected by means of sterilised bellows attached to the needle. When ascites is present it is unnecessary to induce the preliminary pneumoperitoneum, the trocar and sheath being inserted straight away. We have been surprised how little inconvenience patients experience when the peritoneal cavity is relatively quickly inflated or deflated with air. After inflation is complete, the needle is withdrawn, and the nick in the skin enlarged with the scalpel so that it is just adequate to take the instrument, and the cut is further deepened to make a small incision in the fibres of the linea alba. The trocar and sheath are then inserted; it is important in doing this to direct its point to one or other side of the midline, so that if it slips into the peritoneal cavity with a jerk there is no danger of injuring viscera against the vertebral column; as with the pneumoperitoneum needle, it is possible to satisfy oneself that it is in the cavity by moving it freely from side to side. The trocar is now withdrawn, and the air escapes. If free fluid is present it is wise to withdraw it at this stage, since if air is blown through it the ascitic fluid froths and obscures the field of vision. When the telescope is being passed down the sheath the abdomen is reinflated, so that the lens does not come in contact with the viscera; if this happens, it is necessary to remove the telescope and clean the lens. When the examination is complete the air is allowed to escape before the sheath is withdrawn. Finally the skin is closed with a single stitch. Gentle pressure on the abdominal viscera with the end of the telescope causes no discomfort to the patient, who as a rule is unaware when biopsy specimens are being taken from solid viscera, but care must be taken not to press on the parietal peritoneum since this causes pain.

RANGE OF VISION

After a little experience the examiner learns to recognise landmarks; in the upper abdomen the falciform ligament stands out, and serves as a guide to the fissure between the lobes of the liver; below the umbilicus, the two folds formed by the obliterated hypogastric arteries are prominent. It is not necessary to give a description of the various organs as they appear through the peritoneoscope; their recognition, and particularly the recognition of pathological appearances, can only be learned by experience. The organs which can usually be observed in the normal peritoneum are enumerated below, but it must be realised that, particularly in fat subjects, omentum may obscure the field of vision and thus limit the scope of the examination. All the peritoneum of the anterior abdominal wall, parts of the lateral walls, the anterior part of the under surface of the diaphragm, the anterior surface of both lobes of the

liver, and usually parts of their under surfaces, together with the anterior surface of the stomach are easily examined. By raising the left lobe of the liver with the tip of the telescope, most or all of the anterior surface of the lesser curvature is available for inspection; the fundus of the gall-bladder may be seen and its lower surface up to the cystic duct is exposed by depressing the transverse colon. If more than the tip of the spleen is visible, this may be taken as evidence of splenomegaly. In the central abdomen omentum tends to hide the intestines but some coils are always visible, and the cæcum and sigmoid colon sometimes present themselves; by adjusting the position of the patient it may be possible to inspect the appendix. The pelvic organs are brought into view by placing the patient in the Trendelenburg position, with the bladder emptied, and their examination is facilitated by the assistant placing two fingers in the vagina, and manipulating the uterus and appendages to enable their different surfaces to be seen. With the intestines displaced from the pelvis a clear view can be obtained of the fundus uteri, the fallopian tubes and round ligaments, while, when the assistant alters the position of the uterus, the ovaries and the peritoneum covering the anterior and posterior surfaces of the broad ligaments, the pouch of Douglas and the utero-vesical pouch can be examined. When adhesions are present or there is a retroverted uterus, however, difficulty may be experienced in seeing the ovaries and posterior layers of the broad ligaments.

RESULTS

In general the purpose of a peritoneoscopy is to settle a question of differential diagnosis, or in a case of malignancy to determine the presence or absence of metastases with a view to operability; in some cases both these objects may be our aim. It will usually be called for as an alternative to an exploratory laparotomy, and should only be employed when there is a definite reason; it has been proved to be reasonably safe, and will save many patients the risk and discomfort of open abdominal exploration. We have had no serious complications, the only minor one being some degree of surgical emphysema of the abdominal wall in a few cases; in no case were the abdominal contents injured, and in Ruddock's extensive experience the accident has happened in only 0·6% of cases, in every one of which it was recognised at the time and dealt with surgically. We have never seen a hernia through the puncture in the abdominal wall, and in all series reported to date there has been no case of air-embolism. Patients who have had this investigation under a local anæsthetic are able to leave hospital next day.

In the upper abdomen we have found peritoneoscopy particularly useful in gastric and liver conditions. Of 32 cases of carcinoma of the stomach, examined with a view either to confirming the diagnosis or assessing operability, 9 showed metastases and were considered inoperable, thus being spared laparotomy. In 20 no metastases were seen, and laparotomy was undertaken; 11 of these had a subsequent gastrectomy, while 9 were found at operation to be inoperable on account of an extension of the growth not seen through the peritoneoscope. In 2, no growth was seen with the peritoneoscope, but operation revealed a carcinoma; 1 patient, in which no metastases were seen, was not operated on because of his poor general condition.

A series of 18 patients with either palpable enlarged livers or ascites probably of hepatic origin have been examined; 10 showed malignant nodules, 4 cirrhosis, 2 hepatitis and 2 fatty degeneration. Of 8 cases of suspected cholecystitis or gall-stones, 6 showed a pathological gall-bladder, confirmed at operation, while in 2 the gall-bladder appeared to be normal but was found at operation to contain a single stone. Thus a positive result is of value in dealing with the gall-bladder, but a normal looking gall-bladder may still contain calculi.

In 16 cases the ovaries were examined, 8 on account of menstrual irregularities, of which 6 showed multiple unruptured graafian follicles and 2 polycystic ovaries, and 8 for ovarian cysts, of which 3 were malignant with peritoneal metastases, while in the other 5 the diagnosis was confirmed and the cyst subsequently removed. In a further 2 cases, in which malignant ovarian cysts had previously been removed, metastases were found in 1 case and confirmed by a subsequent autopsy. Of 8 cases of carcinoma of the body or cervix of the uterus 3 showed peritoneal metastases, 1 liver metastases, and 4 evidence of broad-ligament invasion only. Other conditions which have been diagnosed include ectopic pregnancy, metastatic retroperitoneal melanotic sarcoma, tubercular peritonitis, tubercular salpingitis, endometrioma, and some cases of splenomegaly. In 2 cases diagnosed clinically as tubercular peritonitis no pneumoperitoneum could be established on account of adhesions; this was confirmed by laparotomy in one case.

There is no point, in this preliminary report, in giving a complete list of all the cases, since in a number of the early ones the examination was inconclusive, and in others there has been no opportunity to confirm the peritoneoscopic findings. But a few illustrative examples may be given.

CASE-RECORDS

CASE 1.—A girl of 21, complaining of two attacks of hæmatemesis, had a barium meal and was reported to have appearances suggesting a leather-bottle stomach suspicious of carcinoma. Peritoneoscopy showed the characteristic appearance of subserous malignant infiltration with no metastases, and a total gastrectomy was successfully performed.

CASE 2.—A woman of 64, complained of abdominal pain and wasting of 7 months' duration, and her clinical condition suggested that she had a carcinoma of the stomach; a barium meal was inconclusive. Peritoneoscopy showed the anterior surface of the stomach to be normal, but scarring and adhesions to the first part of the duodenum suggested duodenal ulcer. She made a good recovery on medical treatment, and reported well 3 years later.

CASE 3.—A woman was admitted with subacute intestinal obstruction, the site of which could not be determined clinically; under a general anæsthetic the obstruction was localised by means of the peritoneoscope to the lower part of the ileum, and the absence of metastases in the liver noted. At operation these findings were verified, and a short circuit performed, with subsequent removal of the cause of the obstruction, a lymphosarcoma.

CASE 4.—A girl of 22 had had a papilliferous ovarian cyst removed 6 months before; she now complained of abdominal pain and nausea; no tumour could be felt clinically. Peritoneoscopy showed several metastatic nodules in the peritoneum and intestinal wall.

The following two cases illustrate the differential diagnosis of ectopic gestation.

CASE 5.—A young woman who had had one previous child. She now had had two months amenorrhœa, and complained of having had an acute attack of pain low in the right iliac fossa, followed by a vaginal loss and vomiting. The pulse-rate and temperature were a little raised and there was tenderness in the right vaginal fornix but no mass was felt. Peritoneoscopy showed both fallopian tubes to be normal, a little blood-stained fluid in the pouch of Douglas and a recently ruptured graafian follicle in the right ovary. She made a rapid and complete recovery with no special treatment.

CASE 6.—A young primigravida with irregular menstruation and 10 weeks amenorrhœa, acute pain in the left iliac fossa, followed by a vaginal loss, slight rise in temperature and increase in the pulse-rate. The left vaginal fornix was tender and contained an indefinite swelling. Peritoneoscopy showed a left pyosalpinx and this was confirmed by laparotomy.

CONCLUSIONS

This series is a short one, and only a few conclusions can be drawn from it. The method of investigation is still, particularly in this country, in its early stages. With experience and improvements in the instruments and technique a greater proportion of reliable results will be obtained, giving rise to more accurate diagnosis and sparing an increasing number of patients a useless laparotomy. In some of our cases the conclusions drawn have been misleading, but as experience grows the number of these is being reduced. In cases of ascites the operation is no more severe than paracentesis and gives far more information. In malignant neoplasms, particularly of the stomach, it helps the surgeon to determine the question of operability; in those of

the colon it is less often useful, since operation for the relief of obstruction is usually required even if there are metastases; but in cases of carcinoma of the uterus an estimate may be made of the degree of spread. Many liver conditions can be diagnosed with certainty, and we suggest that in all cases of disease of this organ in which the diagnosis is uncertain peritoneoscopy should be seriously considered. Finally, in a great variety of intra-abdominal and pelvic conditions the method helps to settle points of differential diagnosis and it might well be used more in Great Britain.

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MASS RADIOSCOPY IN FACTORIES

TWO SMALL SURVEYS

A. STEPHEN HALL, M.B. CAMB., M.R.C.P.
TUBERCULOSIS OFFICER TO MIDDLESEX COUNTY COUNCIL

MUCH has been written lately concerning the value of mass radiography of the chest, and reports, among others, of investigations into the pulmonary pathology of Australian recruits, British sailors and University College Hospital students are available, but so far little has been done in this country with the ordinary unselected civilian population. Anyone who has felt the urge to conduct such an examination must at once have become conscious of the many difficulties, of which lack of suitable apparatus and the reluctance of the population to submit to examination are the chief. Nevertheless, few of us doubt that these difficulties will soon be overcome and this report is an account of how they were attacked in the district in which I am tuberculosis officer.

Since early in 1938 I have had a Victor X-ray screening set in my consulting-room and my practice is to conduct my examination almost entirely by radioscopy, using the stethoscope to ascertain the presence of bronchitis or pleural friction. At first the patients were all radiographed as well as screened in order to test the accuracy of the screening, but I soon found that a high degree of accuracy had been attained and so came to place great reliance on my screening. So far as I know only on two occasions have I declared the screen image to be normal and the film has subsequently shown a small abnormality. Often, however, the respiratory and other movements of the patient behind the screen have enabled me to detect shadows not shown on the film, or to interpret obscure radiographical appearances. When, therefore, in the summer of 1940, I was thinking of examining employees of some of the many factories in my district, I naturally felt that radioscopy was the best method for me to employ; this opinion was strengthened by the lack of any apparatus for miniature radiography in the factories. There were one or two stationary sets in use and a number of experimental camera units in association with ordinary X-ray sets, but there was, and is, no proven, robust, transportable apparatus which one could take into a factory with confidence. Radioscopy was therefore the method of choice and necessity. Permission to undertake the work was obtained from the chairman of the public-health committee and the county medical officer, who stipulated that the names of any employees found to be affected with tuberculosis should not be revealed to the management of the factories without the employee's permission.

FIRST SURVEY

My first plan was that the workers should attend the clinic in batches of 30–50 to be screened, but it soon became clear that this would involve serious difficulties of transport and would entail considerable loss of working time. I therefore suggested to the London agent of the Victor X-ray Corporation that he should lend me a set similar to my own for a short time, and he readily agreed. An interview was arranged with the managing director of a firm employing some 400 men and 800 women in a fine modern factory, and I explained to him that of tuberculous patients presenting themselves for examination about 80% were already beyond hope of having the disease made quiescent, and that the outlook was much better if the disease was found in its early stages. I then put before him the proposition of examining by X ray the entire staff of the factory. After much friendly discussion an agreement was reached. I was to conduct the investigation free of charge to the firm, but the examination and any subsequent investigations should take place in the firm's time; the confidential nature of the examination was recognised; and the firm agreed to re-employ any tuberculous employee at the conclusion of the necessary treatment, provided the patient had been rendered non-infectious. I tried to persuade the management to continue paying the employees' wages while they were away receiving treatment but this point was not conceded.

The next problem was that of acquainting the workers with our plan, and our idea was to employ a good deal of propaganda. I thought it best to let them know in simple language the main facts of the problem, and, against advice, was not reticent about the use of the word tuberculosis. In the factory was a canteen where at 12.30 every day about 600 of the girls sat down to lunch, and it was decided to hold a meeting there during the lunch hour. In the chair was Dr. Harley Williams of the National Association for the Prevention of Tuberculosis, and the principal speaker was Dr. Edith Summerskill, M.P. At first there was some indifference among the audience, but by the end of the meeting the girls were crowding round the platform, standing on the tables and chairs, and in various ways testifying to their interest. After this meeting visits were paid to each department to enlist the support of the shop stewards; attempts were also made to placate the production managers, whose figures, no doubt, would show a slight fall while the girls were away for examination.

The essential clinic work had to continue during this investigation and so we were only able to be at the factory a limited time; we held eight sessions of about 2½ hours each in a fortnight. The factory welfare nurse was in charge of the organisation of the attendance of the girls, a task requiring care, for it was important that no one shop should have its number of girls seriously depleted during the session; so a few girls had to be taken from each of several shops. This organisation of the attendance of the employees is likely to prove one of the main difficulties in this sort of work, for, although the radioscopic examination occupies rather less than a minute, there is undressing and dressing to be done, and the names, addresses and ages have to be recorded on cards, with the result that there is a tendency towards congestion in the changing-room, or on the other hand the doctor may outstrip the organisation and find himself without patients for a while. It is said that miniature radiographic sets can operate at 200 an hour; they may well do so when their subjects are recruits who can be lined up for an hour or so before being passed through, but I can foresee difficulties in organising people in a factory at that rate.

Although our appeal had been mainly to the women in the factory, yet after we had been there a few days some of the men asked to be screened and we were willing enough, although it brought our proportion of attendances down, our original intention being to screen the women only.

Of the 800 women in the factory 482 submitted to examination; of these, 2 were regarded as suffering from phthisis, and 5, being doubtful, were asked to attend the clinic for observation. A number of other thoracic abnormalities were noted, such as calcified spots, Parrot's nodes, bronchiectasis, mitral stenosis, and azygos vein lobes. No case of known established tuberculosis was found. Of the 400 men, 93 were examined; 1 was regarded as tuberculous, and 1 as suspicious; this last man appeared to have silicosis as well and had been for many years a miner in Wales. All 3 tuberculous employees accepted sanatorium treatment.

The limitations of this method of survey were impressed on me three weeks later when one of the girls whom I had examined at the factory and declared to be free from tuberculosis was admitted to my ward with a large tuberculous peritoneal effusion. There was, however, no evidence of disease of the lungs. Her sister, who had joined the factory after I had begun my screening and had not been examined, was then called to the clinic as a contact and was found to have phthisis.

SECOND SURVEY

The next factory to which I turned my attention was also new, well-constructed and well-ventilated, and in it were about 800 people, by far the majority young women. Dr. Neville Crosby, the medical officer to the factory, welcomed the idea of screening them all, and after a meeting with the managing director I was allowed to proceed. The former guarantees of re-employment after treatment and examination in the firm's time were obtained. The factory was already fitted with loud-speakers to every department and when arrangements were ready the works manager made a short speech into the microphone, explaining that it was the wish of the directors that everybody, men and women, executives and hourly workers alike, should be X rayed to be certain that the unnatural sort of life many were now leading was not affecting their health, and asking any who did not agree to be X rayed to give their names to a supervisor.

It should be noted that no guarantees were given, no mention of tuberculosis was made, and, most important of all, that the employees were asked to send in their names if they did *not* wish to be examined. The same arrangements were made as for the previous factory, and the set was hired from the Victor Company. The attendance exceeded our expectations, for of the 820 employees 795 came for examination. Of these, 17 were given appointments to attend my clinic for fuller investigation; 2 of them were known established cases of phthisis, and 1 other was found to have active disease and was given sanatorium treatment; 13 were asked to keep under observation, and of these latter 1 was subsequently regarded as having active disease. The remaining patient was a middle-aged man with peculiar shadows suggestive of cystic disease.

DISCUSSION

The amount of work and organisation necessary to conduct these two small factory surveys was considerable, so I was somewhat disappointed with the 60% response in the first factory; the response in the second, however, must be regarded as very satisfactory. Perhaps too much propaganda was used and the word tuberculosis was used too often in the first factory. The number of cases of tuberculosis discovered, while satisfactory as an indication of the health of the community, was smaller than I had expected. But there are other important effects of the surveys which are not immediately apparent. The directors, for instance, were stimulated to further interest in the health and welfare of their employees; the employees who were to attend for observation were advised about diet, overtime work and other activities, and so perhaps have been prevented from developing the disease; lastly, the employees have become accustomed to the idea of X-ray examination even though they are apparently fit. This point is important, for when this sort of examination ceases to have much emotional meaning for the examinees little difficulty will be experienced in obtaining the coöperation of the great majority of the population at risk.

During the late summer two of the girls who were found to be tuberculous in the first survey, having returned from sanatorium, resumed their work in the factory. I am told that they are creating a favourable opinion of the radioscopic examinations and I have been asked to return to make a further survey. A return visit will be well worth while, particularly as there are some 500 new employees since last year. This invitation indicates that the management understand something of the tuberculosis problem, and that the staff will coöperate when they have the opportunity.

SUMMARY

X-ray screening of the chest was offered to the work-people in two factories, the management allowing this to be done in working hours. In the first 60% and in the second 97% came for examination. Of 575 people examined in the first factory 3 were found to be tuberculous. Of 795 examined at the second factory 2 were known to have phthisis and 2 others were found to have active disease.

BLOOD VISCOSITY

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THE composition of blood may be altered by loss of plasma or blood from the circulation, as in traumatic shock, or reverse changes may be instituted by transfusion of plasma or blood. These variations have a topical interest and it seems worth while to consider their effect on blood viscosity, which has been thought to be a factor of some significance in shock (e.g. Cannon 1918, Moon 1938).

Measurement of blood viscosity.—On Boxing Day, 1842, the observations of Poiseuille, and his law governing the flow of water through fine tubes, were enunciated to the Académie des Sciences (Arago et al. 1843). Blood seems to obey Poiseuille's law if the pressure driving it is not below 100 mm. of mercury and the tubes are not finer than 0·3 mm. in diameter (Fahraeus and Lindqvist 1931). Blood viscosity may therefore be measured relative to water by comparing the flow of the two fluids through similar tubes. Many types of viscosimeter have been used (Arago et al. 1843, Hirsch and Beck 1900, Mayer 1901, Demning 1906, Determann 1906a, Burton-Opitz 1907, McCaskey 1908, Trevan 1918, Fahraeus and Lindqvist 1931, Brundrage 1935) and that of Hess (1907a) has found favour as an instrument for clinical use. Blood and water at 20° C. ± 3° C. are drawn through exactly similar horizontal capillary tubes into graduated measuring tubes by the suction of a rubber bulb. When the blood has travelled from 0 to 1 in one graduated tube the suction is stopped and the amount of water which has flowed into the other graduated tube is noted. If it has reached mark 5 the blood is 5 times as viscous as water; the blood viscosity is simply recorded as 5.

I could not obtain a Hess viscosimeter, and so made one, using thermometer tubing 140 mm. in length and 0·6 mm. in bore for the capillary tubes, and graduated 1 c.cm. pipettes as measuring tubes. They were joined by a glass Y-tube to a rubber aural syringe which produced the suction. All the joints were of rubber tubing. The whole was mounted on a board, but could be taken to pieces for cleaning. The readings are probably not very different from those obtained with a Hess instrument, as I found the mean blood viscosity of 50 healthy and convalescent people to be 4·65 (standard deviation 0·87) while Nygaard, Wilder and Barkson (1935–36) found values of 4·64 (S.D. 0·86) in 503 healthy people. The estimations of plasma viscosity were, however, rather lower than those given by most authors.

Venous blood was used, 3 c.cm. being taken into a syringe which had been washed out with normal saline to avoid hæmolysis, which increases viscosity, as much saline as possible being ejected from the syringe before use.

Some investigators (Hess 1907b, Bolognesi 1909, Austrian 1911, Holbrook and Jackson 1939) used fresh blood, but this has obvious drawbacks. Burton-Opitz (1911) and Bircher (1920) used defibrinated blood, but defibrination alters the viscosity. Heparin is said to alter the viscosity of plasma (Oberst 1939). Hirudin has been found satisfactory (Determann 1906a and b, Welsh 1911–12, Trevan 1918, Brundrage et al. 1936). Oxalate salts (see Langstroth 1919) are cheap and readily available but cause corpuscular shrinkage (Wintrobe 1933) although this can be largely obviated by using 2 mg. of a 2 : 3 mixture of potassium and ammonium oxalate per c.cm. blood (Heller 1934). The 3 c.cm. blood was therefore squirted into a 25 c.cm. screw-capped bottle which contained 6 mg. of the salt mixture, and shaken thoroughly for some minutes to ensure solution of the oxalate and aeration of the blood. Shaking was repeated immediately before the estimation was made, and done again between each group of three estimations if a constant result was not obtained in the first three. This is important, as corpuscular sedimentation is rapid in some specimens, and causes errors.

Factors governing blood viscosity.—The proportionate volume of the formed elements, or hæmatocrit, is of great

importance in controlling the viscosity of whole blood; as the hæmatocrit rises, the blood becomes more viscous. In addition, changes in plasma viscosity play their part. Hess (1912) and Trevan (1918) thought that these were the only important factors, apart from temperature. However, if salt is added to blood to make the plasma hypertonic plasma viscosity does not alter appreciably,

TABLE I.—Viscosity of blood (VB), of plasma (VP), and of corpuscles (VC), hæmatocrit (H), and mean corpuscular volume (MCV), when NaCl was added to oxalated blood to produce hypertonicity.

Concentration of added NaCl (%)	VB	VP	VC	H (%)	MCV (c.μ)
0	3·4	2·1	13·3	23	90
0·2	3·6	2·1	14·1	19·8	77
0·4	4	2·1	15·4	18	70
0·6	4	2·1	15·8	16·7	66

yet the blood viscosity is increased, although the hæmatocrit is reduced by corpuscular shrinkage (table I). Therefore the corpuscles have a rôle in the production of the internal friction of the blood apart from the percentage volume they occupy. This factor may be labelled corpuscular viscosity.

Blood is a mixture of plasma and formed elements (chiefly red corpuscles). The latter are sometimes spoken of as the solid portion of the blood, but in fact packed corpuscles can flow along a hæmatocrit tube which is laid on its side, and can be sucked into a capillary pipette. They are formed, but can be deformed, as they consist of fluid in a thin envelope. Deformation occurs readily in capillaries, where the pressure is slight (Krogh 1929). I have found it helpful to visualise blood, in relation to its viscosity, as a mixture of two fluids, plasma and packed corpuscles.

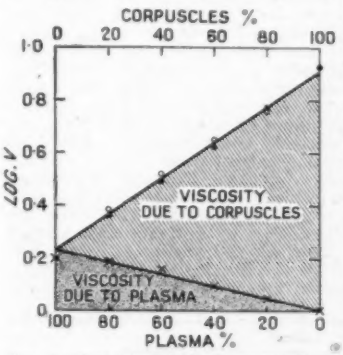

FIG. 1—Viscosity and blood concentration.
● log blood viscosity plotted against % corpuscles in plasma-corpuscle mixtures.
× log plasma viscosity plotted against % plasma in plasma-saline mixtures.
○ log corpuscle-saline viscosity in corpuscle-saline mixtures plus log plasma viscosity in plasma-saline mixtures, plotted against % corpuscles.

Plasma viscosity.—Fishberg (1930) showed that the logarithm of the viscosity of mixtures of plasma and water varied as the proportion of plasma in the mixture, although this relationship can be modified by a high urea, cholesterol, or bile-salt content of the blood. Oberst (1939) applied another formula, but the discrepancies between the two equations are slight when the figures are low, as the values of plasma viscosity are, and my apparatus was not sufficiently sensitive to determine which is correct.

Hæmatocrit.—If the corpuscles and plasma in oxalated blood are separated by centrifugation they may be mixed in different proportions and the viscosity of each mixture can be estimated. Some relevant results are shown in table II. From the curves obtained (fig. 1), there seems to be linear relationship between the hæmatocrit (% occupied by the corpuscles) and the logarithm of the viscosity. Furthermore, the logarithm of the blood viscosity is equal to the logarithm of the plasma viscosity multiplied by the proportion of plasma, plus the logarithm of the viscosity of the packed corpuscles multiplied by the proportion of corpuscles, or

$$\log \text{VB} = \frac{\log \text{VP}(100 - \text{H}) + \log \text{VC} \times \text{H}}{100}$$

where VB is blood viscosity; VP is plasma viscosity; VC is corpuscular viscosity; and H is hæmatocrit.

Other formulæ have been proposed. That of Frei (1907–08) and the second equation of Nygaard, Wilder and Barkson (1935–36), deny that variations in plasma or corpuscular viscosity affect blood viscosity. The formula of Hess (1912), the two equations applied by Trevan (1918), and the first equation of Nygaard, Wilder and Barkson (1935–36) deny that corpuscles have any influence apart from occupying space—i.e., altering the hæmatocrit. Bayliss (Bazett 1919) suggested that there was a logarithmic relationship between blood viscosity and hæmoglobin per cent.

TABLE II—OBSERVED VISCOSITY (OB. V) AND CALCULATED VISCOSITY (CAL. V) OF CORPUSCLE-PLASMA MIXTURES

Blood	Corpuscles (%)	Ob. v	Cal. v	Log ob. v	Blood	Corpuscles (%)	Ob. v	Cal. v	Log ob. v
A	0	1·54	..	0·1875	B	60	6·1	6·4	0·7852
	20	2·3	2·2	0·3617	(*cont.*)	80	10·4	10·4	1·0170
	40	3·1	3·1	0·4914		100	16·4	..	1·2148
	60	4·2	4·3	0·6232					
	80	5·9	6	0·7709	C	0	1·8	..	0·2553
	100	8·5*	..	0·2994		20	2·7	2·6	0·3617
B	0	1·6	..	0·2041		40	3·4	3·5	0·5315
	20	2·7	2·5	0·4314		80	7	7·4	0·8451
	40	4·3	4·1	0·6333		100	11·6	..	1·0645

* Washed corpuscles.

Corpuscular viscosity.—Since packed blood corpuscles are much thicker than water, it is difficult to measure their viscosity accurately with a Hess viscosimeter in which the measuring tubes are equal in size. But if VB, VP and H are known, VC can be calculated from the formula given above. The corpuscular viscosity was sound to vary within fairly narrow limits, but the causes of such variations are not clear. In a random group of 18 people, no relationship could be found between corpuscular viscosity and mean corpuscular volume, mean corpuscular hæmoglobin or mean corpuscular hæmoglobin concentration. In consecutive estimations on two patients, however, corpuscular viscosity did vary with mean corpuscular volume (table III).

TABLE III.—Corpuscular viscosity (VC), mean corpuscular volume (MCV), mean corpuscular hæmoglobin (MCH), and mean corpuscular hæmoglobin concentration (MCHC), in a patient with intractable bleeding from a duodenal ulcer, who had frequent blood-transfusions (case 36), and another patient, suffering from chronic empyema and nephritis, who had a blood-transfusion (case 38).

Case	Date	VC	MCV (c.μ)	MCH (μmg.)	MCHC (%)
36	Feb. 24	12·7	77	23	30
	24	13·8	80	21	27
	25	13·8	83	25	30
	26	14·5	102	30	29
	27	11·7	81	25	30
38	Feb. 21	13·3	89	23	26
	24	12·5	67	18	28

The change in viscosity is probably not caused by the change in the size of the corpuscles, for in vitro VC is increased when the corpuscles are diminished in size by hypertonicity of the plasma (table I). Several observations of viscosity were made in each of 23 patients. When these revealed a fall in plasma viscosity (and therefore in the protein concentration of the plasma), there was an associated rise in corpuscular viscosity 21 times, and a fall 8 times; when plasma viscosity rose there was an associated fall in corpuscular viscosity 12 times and a rise 9 times. Changes in VC occur with changes in the milieu in which the corpuscles lie, but it would be unwise to particularise without more investigation.

Stephens (1936) concluded that leucocytes probably did not alter blood viscosity notably unless there were more than 50,000 per c.mm.

BLOOD VISCOSITY IN HEALTH AND CONVALESCENCE, AND IN THE LAST MONTH OF PREGNANCY

Since there are no published figures expressing corpuscular viscosity, measurements were made in 50 people, of whom 13 were in good health and 37 fully convalescent

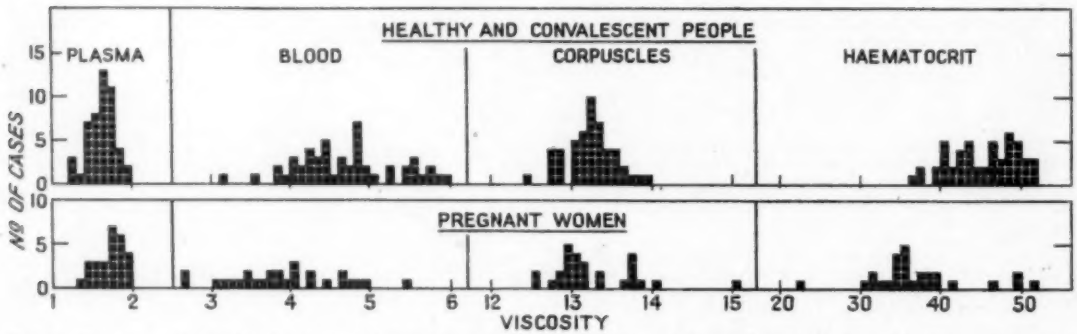

FIG. 2—Viscosity of plasma, blood and corpuscles, and hæmatocrit, in 13 healthy and 37 convalescent people, and in 27 pregnant women.

from various ailments, mostly trivial. In this series 10 were female and 40 male; 7 were in the first decade of life, 12 in the second, 21 in the third, 7 in the fourth, 2 in the fifth, and 1 in the sixth. The distribution of the values found may be seen in fig. 2. The blood viscosity and hæmatocrit estimations did not differ much from those of Nygaard and others (1935–36) (table IV).

Because some further work was done on the blood changes occurring during labour and post-partum blood-transfusion, observations were also made on 27 women during the last month of their pregnancies (table IV and fig. 2). The plasma and corpuscular viscosity in them did not differ materially from the "normal," but there was a parallel reduction of blood viscosity and hæmatocrit in the pregnant women.

TABLE IV—MEAN VISCOSITY AND HÆMATOCRIT IN HEALTHY PEOPLE AND PREGNANT WOMEN

Author	Subjects	Type	Plasma viscosity		Blood viscosity		Corpus viscosity		Hæmatocrit	
			Mean	SD	Mean	SD	Mean	SD	Mean	SD
Evans	50	Healthy conv.	1·71	0·14	4·65	0·87	13·19	0·65	44·80	5·72
Nygaard et al. (1935–36	503	Healthy	1·96*	0·14	4·64	0·86	..	..	44·47	7·52
Evans	27	Pregnant	1·7	0·16	3·88	0·66	13·22	0·55	36·44	7·19

* Serum. Conv. = convalescent

BLOOD VISCOSITY AND TRANSFUSION

It is recognised that plasma-transfusion will reduce blood viscosity more than blood-transfusion, but apparently no measurements of the degree of these changes have been published. In table V figures are given for 5 transfusions of plasma and 16 of blood. Estimations were made immediately before and immediately after transfusion, and about 24 hours later. It was not always possible to get the third reading, as a second transfusion was sometimes given in less than 24 hours, and also because 2 of the patients died.

The "plasma" used for transfusion was that removed from stored blood by the Emergency Blood Transfusion Service, and thus consisted of a mixture of plasma and citrate-glucose-saline solution. The blood transfused was fresh, and contained 10% of 3·8% sodium citrate solution, except for the second transfusion in case 38, when stored blood was used.

The transfused plasma had a viscosity of about 1·6, so that if the patient's plasma viscosity was over 1·6 it might be expected to fall after transfusion, and if under to rise. The viscosity of the plasma in transfusion blood was not constant, so the expected result occurred often but not always (table VI).

The changes in plasma viscosity need not be further considered, for, in comparison with alterations in hæmatocrit and corpuscular viscosity, they have little effect on variations in whole-blood viscosity.

Plasma-transfusion in cases of circulatory collapse was accompanied by a fall in hæmatocrit, and a variable change in corpuscular viscosity. Although the transfusions were not large, the blood viscosity was reduced by from 8 to 30%, with a mean of 17% (fig. 3).

Blood-transfusion for hæmorrhage (i.e., bleeding during transfusion or in the preceding 24 hours, whether chronic anæmia was also present or not) produced variable results, depending not alone on the transfusion but also on the changes produced in the blood as a reaction to hæmorrhage. The mean changes in 3 patients from whom complete figures were obtained are shown in fig. 3, and suggest that transfusion served to retard temporarily the reduction of blood viscosity which was occurring as the blood volume was being restored by hæmodilution during recovery. There was no suggestion that the hearts of such patients were overloaded by a rise in blood viscosity.

Blood-transfusion for anæmia was accompanied by a rise in the mean hæmatocrit and fall in corpuscular viscosity, so that there was usually little change in blood viscosity. In two patients (cases 30 and 6) there was a considerable rise in blood viscosity, caused by a rise of both corpuscular viscosity and hæmatocrit. Both had had transfusions of 540 c.cm. the day before, but a third transfusion in case 30 was not followed by a rise in blood viscosity. In the 24 hours after transfusion there was sometimes a rise in viscosity and sometimes a fall. The rise was large only in one patient (case 38) and was due to a rise in corpuscular viscosity. These results suggest that a dangerous rise in blood viscosity is not likely after blood-transfusion in anæmic patients. This does not, of course, necessarily apply to patients with hæmoconcentration. In them blood-transfusion would presumably be followed by a reduction of blood viscosity, but if plasma continued to escape from the capillaries

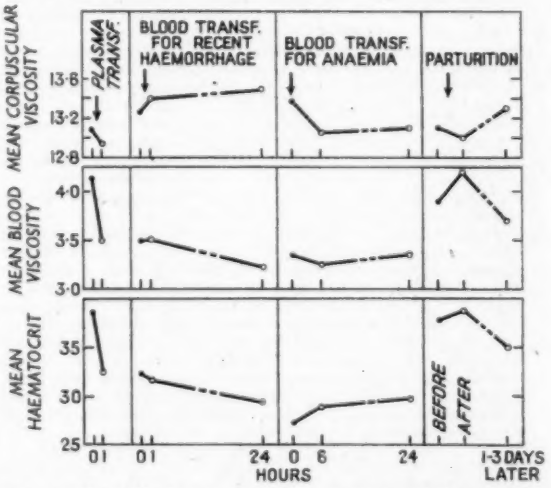

FIG. 3—Mean blood and corpuscular viscosity and hæmatocrit before, immediately after, and about a day after transfusion and parturition.

TABLE V—VISCOSITY AND HÆMATOCRIT BEFORE AND AFTER TRANSFUSIONS

Case	Diagnosis	Reason for transfusing	Amount transfused (c.cm.)	Duration of transfusion (hr.)	Plasma viscosity			Blood viscosity			Corpuscular viscosity			Hæmatocrit		
					B	A	Nd	B	A	Nd	B	A	Nd	B	A	Nd
				PLASMA TRANSFUSIONS												
33	Multiple injuries, no bleeding	Shock	540	½	1·65	1·8	..	5·3	4·9	..	12·8	12·8	..	50	47	..
34	Compound fracture femur	,,	540	½	1·9	1·6	..	4·9	4·3	..	13·2	13·5	..	44	39	..
39	Post-partum hæmorrhage	Collapse	800	1½	1·75	1·7	1·55	3·3	2·4	2·4	13·2	12·6	13·3	29	20	18
35	,, ,,	,,	890	½	1·7	1·65	..	3·5	3·2	..	13·1	13·5	..	33	26	..
13	,, ,,	,,	540	½	1·6	1·6	..	3·7	2·6	..	13·1	12·3	..	37	31	..
				BLOOD-TRANSFUSIONS FOR RECENT HÆMORRHAGE*												
35	Post-partum hæmorrhage	Acute anæmia	450	½	1·65	1·6	1·55	3·2	3	2·9	13·5	13·6	13·8	26	25	24
34	Compound fracture femur	Bleeding during opn.	500	1	1·6	1·6	1·6	4·3	4·5	3·7	13·5	13·5	13·2	39	41	36
13	Post-partum hæmorrhage	Acute anæmia	500	2	1·6	1·6	1·55	3	3·1	3·1	12·8	13·1	13·5	32	29	28
30	,, ,,	Ac. and chron. anæmia	540	1½	1·6	1·7	..	2·7	2·9	..	13·2	13·4	..	23	22	..
36	Bleeding duodenal ulcer	,, ,,	2000	19	1·4	1·5	..	2·3	2·7	..	13·8	13·8	..	17	21	..
36	,, ,, ,,	,, ,,	1200	16	1·5	1·7	..	2	2	..	14·5	11·7	..	14	15	..
12	Post-partum hæmorrhage	Acute anæmia	940†	9½	1·6	1·4	..	3·1	3	..	12·7	13·3	..	34	30	..
12	,, ,,	,, ,,	500†	19	1·4	1·6	1·6	3	3	2·9	13·3	13	13·1	30	29	26
				BLOOD-TRANSFUSIONS FOR ANÆMIA												
2	Cæsarean section	Bleeding 2 days before	250	1	2	1·9	1·8	3·6	3·6	3·5	13·8	13·3	13·7	30	29	26
29	Post-partum hæmorrhage	,, 2 ,, ,,	500	2½	1·8	1·9	1·8	3·3	2·8	3·3	13·6	12·5	13·4	24	25	26
30	,, ,,	,, 1 day ,,	540	4	1·7	1·8	..	2·9	3·9	..	13·4	13·7	..	22	30	..
30	,, ,,	,, 2 days ,,	540	4½	1·8	1·8	1·6	3·9	3·9	3·6	13·7	13·7	13·5	30	30	32
38	Empyema	Chronic anæmia	500	1	1·65	1·6	1·95	3	2·8	3·7	12·7	12·6	13·2	31	31	30
38	Empyema and nephritis	,, ,,	800	2	2·1	1·8	2·1	3·4	3·5	3	13·1	13·9	12·5	23	26	27
12	Post-partum hæmorrhage	Bleeding 2 days before	800	19	1·6	1·8	1·75	2·9	2·9	3	13·1	12·3	12·3	26	33	37
6	,, ,,	,, 5 ,, ,,	800	10	1·9	1·9	..	2·8	4·1	..	12·3	13·5	..	28	33	..

* During transfusion or within previous 24 hours. † 500 c.cm. saline also given. B = before; A = after; Nd = next day.

(e.g., in burns) the final result might be an increase in viscosity.

BLOOD VISCOSITY AND PARTURITION

In parturition there are hæmorrhage and tissue damage. One might therefore expect that any changes in the viscosity of the blood would be similar to those occurring after other injuries, such as surgical operations. In fact, though the changes are variable, an immediate rise in the mean blood viscosity was noticed, and was followed by a fall to a level lower than that observed before labour started. The fall would be expected as a result of loss of blood, and it was chiefly caused by a reduction in hæmatocrit (table VII). The immediate rise was caused by an increase in hæmatocrit and in plasma viscosity. This latter indicates a decrease in the watery constituents of the plasma, which is probably not due to a reduction of the hydræmia of late pregnancy since the change is soon reversed and the plasma quickly becomes less viscous than before. A partial explanation may be that some patients do not drink during labour and so become dehydrated. The change in whole-blood viscosity is similar to that seen after surgical operations by Bolgnesi (1909) and Muller (1909). Corpuscular viscosity was usually diminished during labour and increased in the next day or two, thus partly counterbalancing the factors tending to alter the viscosity of whole blood.

SUMMARY

The relationship between whole-blood viscosity, and the viscosity and quantity of plasma and corpuscles is expressed by the equation: log blood viscosity = log plasma viscosity × proportion of plasma + log viscosity of packed corpuscles × proportion of corpuscles.

Corpuscular viscosity is increased in vitro by hypertonicity of the plasma. The causes of variations in vivo are not clear.

The viscosity of oxalated blood, plasma and corpuscles, and the hæmatocrit, were estimated in 50 healthy and convalescent people. The values obtained for blood viscosity were similar to those obtained by investigators who used fresh blood; the plasma viscosity was slightly lower. There are no comparable figures for corpuscular viscosity, which was found to vary between 12·5 and 14 times that of water.

In 27 pregnant women near term the plasma and corpuscular viscosities were similar to those of the non-pregnant people, but there was a parallel reduction of the blood viscosity and hæmatocrit.

Plasma-transfusion was found to reduce blood viscosity considerably.

TABLE VI—CHANGES IN PLASMA VISCOSITY BEFORE AND AFTER TRANSFUSION

Viscosity before transfusion	Change after transfusion		
	Fall	No change	Rise
Under 1·6	0	0	3
Exactly 1·6	1	3	2
Over 1·6	7	2	3

TABLE VII—BLOOD VISCOSITY AND HÆMATOCRIT BEFORE AND AFTER PARTURITION

Case	Labour and complications	Plasma viscosity			Blood viscosity			Corpuscular viscosity			Hæmatocrit		
		Before	Less than 2 hr. after	1–3 days after	Before	Less than 2 hr. after	1–3 days after	Before	Less than 2 hr. after	1–3 days after	Before	Less than 2 hr. after	1–3 days after
1	Normal	1·75	1·75	1·6	3·5	3·4	4·1	12·7	12·6	13·5	38	39	37
3	,,	1·9	1·9	1·55	3·2	3·2	3·8	12·5	12·3	13·8	34	36·2	32·8
4	,,	1·9	1·9	1·2	4·9	4·3	3·3	12·9	12·7	13·8	49·6	46·3	33·8
15	,,	1·85	1·8	1·9	3·7	4·3	3·4	13	12·7	13·2	35	48	28
16	,,	1·65	1·7	1·45	4·2	3·6	3·3	13·8	13	13·4	34·3	35·5	32
17	,,	1·55	1·6	1·55	3	3·4	4·2	12·8	13·3	13·4	33	32	39
19	,,	1·75	1·9	1·7	3·7	5·3	4	12·9	13·4	13·9	37	41·5	31
27	,,	1·55	2	1·75	4	4	2·8	13·7	12·8	12·4	35	37	29·5
32	,,	1·95	1·85	1·65	4·6	4·8	3·8	13·3	13·4	13·5	39	41	33·6
9	Premature	1·35	1·8	1·8	3·2	3·9	4	13·1	12·9	13·2	35·5	39·1	37
23	Pre-eclampsia	1·35	2	1·85	2·6	4	4	12·5	13·1	13·1	34	37	37·5
25	Urinary infection	1·7	2·1	1·7	4·4	4	3·8	13·7	13·3	13·5	36	33·6	32·4
8	Forceps, episiotomy	1·85	1·9	1·3	4·6	5·3	3·5	13·3	13·7	13·4	41	41·3	38
11	Forceps, tear	1·9	1·9	1·3	5·4	4·6	4·3	13·1	12·9	12·8	51	47	48
Mean	—	1·72	1·86	1·62	3·9	4·2	3·7	13·1	13	13·3	37·8	38·8	35

Blood-transfusion for hæmorrhage retarded the reduction of blood viscosity to a variable extent.

Blood-transfusion for anæmia did not usually increase blood viscosity much, but the transfusions were not large.

Parturition was followed by an immediate increase in the mean viscosity of plasma and blood, and the mean hæmatocrit. Reverse changes occurred later. The changes in hæmatocrit and in plasma viscosity were to some extent counterbalanced by inverse changes in corpuscular viscosity.

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WELL-LEG EXTENSION FOR FRACTURED PELVIS: AN IMPROVED SPLINT

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THE splint which is here described has been designed for the treatment of two very important types of fracture of the pelvic girdle: (1) fracture of the pelvis resulting in upward displacement of one half of the pelvic girdle, sometimes known as Malgaigne's fracture or the "fore-and-aft-fracture"; (2) fracture of the floor of the acetabulum with medial displacement of the head of the femur, sometimes referred to as a central dislocation of the femur. Many patients suffering from such injuries are condemned to suffer from permanent deformity and disability owing to the belief of many surgeons that there is no efficacious means of treatment available. Much too often treatment is concentrated on any coexisting soft-tissue injury and the bony injury is more or less neglected. This should not be so. By the employment of this splint, which makes use of the principle of "well-leg" extension, these fractures can be adequately treated.

This is no new form of extension. At a meeting of the London Medical Society in 1826 Chorley [1] of Leeds advocated a very similar form of treatment for intra-capsular fracture of the neck of the femur. Roger Anderson [2] has devised an apparatus utilising this principle for the treatment of intra- and extra-capsular fractures of the neck of the femur. Hoye of Atlanta, and later Broomhead [3] of Leeds, used this method for treating fractures of the pelvis, the latter using a modified Thomas splint incorporated in plaster.

Well-leg extension is a method whereby fixed extension is applied to the injured leg and counter-extension is taken on the sole of the opposite leg. The more commonly known type of fixed extension is that in which the counter-extension is taken on the ischial tuberosity through a well-fitting Thomas splint. In well-leg extension the pull exerted on the injured leg is transmitted through the bars of the splint to the plaster cast, and through this to the sole of the uninjured leg. Therefore, since the plaster cast cannot move in relation to the pelvis the injured side of the pelvis must of necessity move distally in proportion to the pull exerted on it.

1. *Lancet*, 1826, **12**, 89.
2. Anderson, R. *Surg. Gynec. Obstet.* 1932, **54**, 207.
3. Broomhead, R. *Proc. R. Soc. Med.* 1933, **27**, 576.

PRINCIPLES OF TREATMENT

The "fore-and-aft" or Malgaigne's fracture is a complicated and extensive fracture of one half of the pelvis. There is a fracture of the pubic bone, or disruption of the symphysis pubis, together with fracture of the ilium near the sacro-iliac joint or disruption of that joint. The affected half of the pelvis falls away laterally from the midline in much the same way as the valve of a mollusc opens, but in addition it may be displaced upwards. In that case the limb on that side is carried upwards also and a grave deformity is caused. This fracture is caused by force applied in an antero-posterior direction.

Fracture of the floor of the acetabulum may be accompanied by fracture of the pubic bone or ilium or both. The acetabulum is fractured and the head of the femur is forced medially to a greater or less degree, the extreme case being that in which the head of the femur has been driven completely through the floor of the acetabulum into the pelvis. This fracture is usually due to a fall on the feet, especially if there is some abduction of the limb at the moment of impact or to a fall on, or blow in the region of, the great trochanter.

Damage as extensive as in these types of fracture can only be caused by severe violence. The common accidents responsible are: (1) falling from a height; (2) being crushed between a wall and a moving vehicle, or by falling masonry, &c.; and (3) being run over by a heavy vehicle. Accidents such as these are more common in war-time, not only among fighting forces but also among civilians. Severe damage is done to the bones and joints, and also to the soft parts such as bladder, urethra and muscles of the pelvic girdle. Extensive hæmatomata often result both in the musculature of the pelvis and loin and in the subperitoneal tissues of the pelvis and paracolic gutters, even extending at times between the layers of the mesentery. The associated pain is very severe, even on slight movements, and shock is usually profound. In view of the gravity of the injury it is essential that rest and relief of pain should be obtained—relief not only in the early stages by the use of drugs but during the whole period of immobilisation. It is the surgeon's duty to eliminate as far as possible any pain caused by movement during essential nursing operations, thus improving the morale of the patient and lightening the work of the nursing staff.

The three important aims in treatment are therefore to reduce the deformity, to maintain the reduction until healing takes place, and so to splint the patient that pain is eliminated as far as possible even when the necessary nursing operations are carried out. The nursing of these injuries is often not given sufficient attention. Attention to the patient's comfort during treatment is as important as the treatment itself. Every effort should be made to obtain as perfect a reduction of a fracture as possible, but if in so doing the patient suffers acute discomfort for days and possibly weeks every time the bed is made or a bedpan is used, then the method adopted should be considered faulty and an alternative instituted. Well-leg treatment of the fractures mentioned above satisfies these requirements. Adequate traction is available to effect and maintain reduction of the deformity, and fixation in plaster-of-paris is the least painful method of splintage.

THE SPLINT AND ITS APPLICATION

In essence the splint used (fig. 1) is a Thomas splint with modifications. The ring is absent but pieces of sheet iron are riveted to the upper ends of the side bars at right angles to the bars. These are to allow a purchase to be obtained on the plaster. At the foot end of the splint is a spindle carrying a ratchet at one side and a knob for turning at the other. To this spindle is attached a length of Bowden wire. A Pearson knee attachment is added to allow flexion of the knee in order that the stirrup shall not

press on the anterior border of the tibia. A spring balance is necessary so that constant and accurate measurement can be made of the degree of tension being applied.

FIG. 1—Splint for well-leg traction.

Under general anæsthesia a double hip plaster spica is applied (fig. 2). On the sound side this extends down to and includes the foot. The plaster is padded, usually with Gamgee tissue, since allowance has to be made for movement of the affected limb and pelvis inside the plaster. The special splint is applied with the shorter bar on the inner side of the thigh and the longitudinal bars projecting in the same long axis as the thigh. It is essential that the plaster be not carried too high on the inner side of the thigh, since this is one of the places at which pressure occurs. The other important pressure area is the foot of the well-leg, especially its lateral border. The foot must be carefully padded and bandaged, with no bumps or wrinkles in the wool, and the foot must be in a neutral position. Skeletal traction is obtained by a Kirschner wire passed through the lower end of the femur. As soon as the plaster has set, traction can be begun, about 15 lb. being applied at first, gradually increased to 30-35 lb. as required. X-ray pictures are taken frequently to control the progress of reduction and when this is deemed satisfactory traction is eased off until there is just sufficient to maintain the reduction usually 10–15 lb. Windows may be cut in the plaster to allow early institution of faradism of the quadriceps, or in the event of a ruptured urethra to allow room for the necessary suprapubic drainage.

CASE-RECORDS

The following two cases illustrate the application of the method to the two types of fracture described above.

CASE 1.—A van boy, aged 16. Run over by a lorry. Shocked. Extensive bruising about left hip and loin. In great pain when moved. No injury of the genito-urinary system. Radiogram (fig. 3*a*) shows a fracture of the left pubic bone with disruption of the left sacro-iliac synchondrosis. Slight upward displacement and some lateral opening of this half of the pelvis. Pelvic brim is badly deformed, the oblique diameter being greatly reduced.

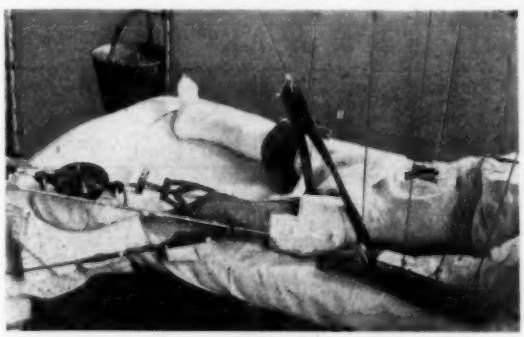

FIG. 2—Double hip spica with well-leg traction applied.

Well-leg counter-traction using a force of 30 lb. for 4 days produced reduction of the deformity (fig. 3*b*). The force was then reduced to 10 lb. for about a fortnight and then discontinued, and the wire was removed from the femur. Two months from the date of accident the plaster was removed and a month later he got up and was discharged to the out-patient department. He was finally discharged 4 months from the time of the accident. He then had full painless movements in all joints and was considered fit for full work.

CASE 2.—A slater and tiler, aged 42. Fell 25 feet off a roof, landing on his right side. In great pain. Some shock. Unable fully to extend right hip. Radiogram (fig. 4*a*) shows comminuted fracture of right acetabulum and ilium. Head of the femur is driven into the pelvis and the oblique and transverse diameters are reduced.

The day after the accident well-leg counter-traction was applied with a pull of 35 lb. In 36 hours deformity had been reduced (fig. 4*b*). Traction was then reduced to 10 lb., and a radiogram taken a month later showed no recurrence of the deformity. Faradism to the quadriceps of the right thigh was begun 2 days after the splint was applied and continued throughout the period of immobilisation. All splintage was removed in 2 months and after a further month in bed he was allowed up on crutches, which were gradually discarded. Within 8 months he was back at full work as slater and tiler.

FIG. 3—Tracings of radiograms in fore-and-aft fracture of pelvis. (*a*) Before treatment; (*b*) after reduction by well-leg traction applied for 4 days.

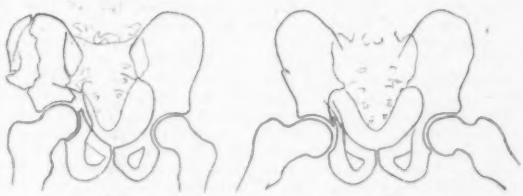

FIG. 4—Tracings of radiograms in fracture of acetabulum and ilium. (*a*) Before treatment; (*b*) after reduction by well-leg traction applied for 36 hours.

SUMMARY

An improved splint has been designed for applying the principle of well-leg extension in the treatment of two serious types of fracture of the pelvic girdle: (*a*) fracture involving one half of the pelvis with a resulting upward displacement of that half; (*b*) fracture of the floor of the acetabulum with a medial displacement of the head of the femur.

The well-leg method of extension, although by no means new, is not sufficiently well known.

The incidence of these two types of fracture is higher in time of war. They are usually the result of severe violence such as crushing or falling from a height. Extensive damage to soft tissues, particularly the bladder, is a common accompaniment, but if attention is mainly directed to these injuries and the bony injury is neglected pain and shock will be caused by movement of fractured surfaces during nursing manipulations, and healing may leave severe deformity.

Nursing of these patients is particularly difficult unless adequate splintage of the fractures is provided. The method here described satisfies all requirements.

Two illustrative cases, one of each type of fracture, are recorded.

The splint may be obtained from Allen and Hanburys.

The headquarters of the FAMILY PLANNING ASSOCIATION has remained at Bournemouth (190, Old Christchurch Road), but the London office in Eccleston Square remains open and the work goes on. In their eleventh annual report for 1941 they point out that the war has increased the need for women to plan their families, most of the voluntary clinics are still open, many report an increase in the number of their patients. Information about the clinics has been sent to industrial welfare superintendents, and the provision of medical advice for married women in the Forces is being considered. The medical subcommittee is conducting a clinical investigation into the comparative efficacy of certain chemical contraceptives.

TWO CASES OF CHRONIC MENINGOCOCCAL INFECTION

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IN his Hunterian lectures on cerebrospinal fever in 1919, Sir Humphry Rolleston[1] divided the cases of intermittent fever due to meningococcal septicæmia into four groups: (1) lasting for weeks without any meningitic symptoms; (2) terminating in meningitis; (3) following meningitis; and (4) showing transient meningitis. The following two cases illustrate some of the difficulties encountered in the diagnosis of this type of infection, and approximate to Rolleston's second group.

CASE 1.—A girl clerk, aged 15½, admitted to the Bolingbroke Hospital on July 7, 1941. Six weeks before she had developed a sore throat and coryza. She had a temperature and was in bed for three days and then returned to work, though she did not feel her normal self. A week later she had complained of headache, slight pains and stiffness in the muscles of her neck and had vomited, and a slight rash had appeared on her arms, lasting a few days. On admission she had a flushed face and looked ill. Temperature 103° F., pulse-rate 124, respirations 24. There was no rash. The tongue and fauces were dry. The discs showed early bilateral papilloedema. Tendon reflexes were absent but the plantar responses were flexor. There was stiffness of the neck muscles, and Kernig's sign was positive. No splenic enlargement. The cerebrospinal fluid was purulent: protein 0·4%; globulin in excess; 9352 polymorphs and 1273 lymphocytes per c.mm.; gram-positive organisms in film, none on culture. She was treated with sulphapyridine, 6 g. being given by mouth on the first day. This made her vomit copiously, so that next day 5 g. was given intravenously, followed by 4 g. in rectal saline. Finally 4 g. was given daily by mouth until a total dose of 25 g. had been given. The temperature and pulse-rate fell to normal in four days, and all symptoms rapidly cleared up. On July 14 the C.S.F. was clear: protein 0·44%; globulin in excess; 69 polymorphs and 97 lymphocytes per c.mm.; no organisms in film or culture. On account of the slowness with which the cells in the C.S.F. returned to normal she was given a second course of sulphapyridine—1 g. t.d.s. for three days. The duration of illness was 12 weeks. No blood-cultures were done. Lumbar puncture on Sept. 1 produced a clear fluid: protein 0·04%; globulin normal; 6 lymphocytes per c.mm.

CASE 2.—A wood machinist, aged 50, admitted to Westminster Hospital on June 8, 1941. He had been taken ill a month before with a sore throat, headache, pains in his legs, vomiting and fever, and had been diagnosed as influenza. He was away from work two weeks, spending the first week in bed. He returned to work but felt limp. A week later his symptoms returned, and in addition he developed stiffness of the neck and photophobia. He then remained in bed at home for a week. On admission he looked ill. Temperature 103° F., pulse-rate 110, respirations 25. He had mild photophobia. There was no rash. The tongue and fauces were glazed. Pupils reacted briskly to light and accommodation; no papilloedema. There was well-marked neck rigidity and head retraction, and a positive Kernig's sign. All reflexes were present except the abdominals; the plantar response was flexor. No splenic enlargement. Cerebrospinal fluid opalescent; pressure 180 mm. of water; protein 0·125%; globulin in excess; 104 polymorphs and 27 lymphocytes per c.mm.; no organisms seen in film; one colony of meningococcus group 1 grown on culture. He was given sulphapyridine by mouth, 9, 6, 6, and 6 g. daily. The temperature and pulse-rate settled within four days and all symptoms cleared up in eight days. On June 17 the C.S.F. was clear: pressure 95 mm. of water; protein 0·075%; globulin in excess; 38 lymphocytes per c.mm.; no organisms in film or on culture. On the 28th it was again clear; pressure 100 mm. of water; protein 0·025%; globulin normal; 3 lymphocytes per c.mm. No blood-culture was done. Throat swab grew *Staphylococcus aureus* only. Duration of illness eight weeks.

The wife of this patient had been admitted on May 4, 1941, and treated successfully for a mild form of acute meningitis, probably meningococcal, though organisms could not be found in the C.S.F. by direct smear and culture, or in the blood after culture for 17 days. A daughter aged 13½ was found by culture of a postnasal swab to be a carrier of group 1 meningococcus.

Both cases 1 and 2 were regarded as infections of the upper respiratory tract. They cleared up without specific treatment sufficiently to allow a return to work, and meningitic signs did not develop until another week had elapsed. This suggests that mild cases of meningococcæmia may easily escape detection, being regarded as cases of influenza and treated as such until eventually meningitic signs appear. The infection produces a fairly severe systemic reaction in these cases, and the meninges are only slightly affected. Both the systemic and meningitic signs clear up very rapidly with sulphapyridine. The meningococcus is difficult to cultivate even in acute cases. In these mild and chronic forms it seems that a diagnosis has sometimes to be made on clinical findings alone and in the face of a negative culture of blood and C.S.F.

Chronic septicæmia appears to be a mild form of meningococcal infection, and like other mild forms may be more common at the end of a seasonal epidemic.

I wish to thank Dr. W. E. Lloyd of Westminster Hospital for permission to publish these cases, and Dr. J. G. Humble and Dr. E. N. Gauld for their help.

1. *Lancet*, 1919, i, 535.

INCIDENCE OF CLINICAL ACNE IN MEN

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THERE have been a number of extensive reviews of the incidence of acne vulgaris at puberty and in adolescence but apparently none in adults. Thus Bloch's paper (1931) is concerned with ages 6–19, Hinricksen and Ivy (1938) 5–22, and Lynch (1939) 17–21. All these regard the presence of comedones as indicative of acne but MacLeod and Muende (1940) say, "The comedo is physiological rather than pathological," and Roxburgh (1939) writes, "The number of comedos required to constitute clinical acne depends on circumstances"! I have included only such acne as is noticeable on looking at a man when stripped and have not searched for blackheads in any case. This corresponds approximately to Hinricksen and Ivy's third group: acne in "the narrowest sense."

The men were soldiers, and 391 were examined; 59 had obvious acne vulgaris—i.e., 15%. The ages of the last 207 were recorded, and the incidence in the different age-groups is shown in the table. None of the 4 men outside these age-groups had acne.

Ages (yr. inclusive)	No. of men	No. men with acne and %
20–24	102	19 (19)
25–29	50	14 (28)
30–39	51	8 (16)

The number of men examined is too small to enable dogmatic statements to be made. Roxburgh (1939) states that acne ceases between the ages of 20 and 30; Sequeira (1927) describes it as "rarely lasting beyond the twenty-fifth year"; and according to Walker and Percival (1939) "after thirty it is rare." It seems that most authorities have put the upper age-limit too low and that acne is relatively common in men over 30.

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Messrs. BOOTS have issued a preparation 'Azozol,' consisting of a 5% solution of hexazole, which is equivalent to Triazol 156, or 'Azoman,' and intended to be used in the same way in the convulsion treatment of mental disease.

EFFECT OF ELECTROTHERAPY ON DENERVATED MUSCLES IN RABBITS*

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A HUNDRED years ago John Reid in Edinburgh published a paper on the relation between muscular contractility and the nervous system in which he described for the first time the beneficial effect of a galvanic current on denervated muscles. Since then opinions about the value of electrotherapy in the treatment of peripheral nerve lesions have oscillated considerably. Its importance was at first overrated, but later there was some scepticism and criticism and even complete repudiation of its value. Even the great clinical experience of the last war has not settled this problem and no satisfactory conclusions can be reached from the experiments on the subject (Friedlaender 1896, Langley and Kato 1915, Langley 1916, Hartmann and Blatz 1920, Fischer 1939, Chor et al. 1939, Solandt and Magladery 1940).

We therefore decided to study this question again in the rabbit. We have restricted ourselves to the study of the effect of the galvanic current on denervated muscles and have given particular attention to: atrophy of the denervated muscles; electrical excitability and contractility of the denervated muscles; and time and quality of recovery of function of the re-innervated muscles.

METHODS

The muscles used were the group supplied by the peroneal nerve in 6 rabbits. In 4 of these the peroneal nerve on both sides was completely interrupted by crushing with fine forceps approximately 80 mm. from entry into the peroneus longus muscle. In 2 others the peroneal nerve was cut at the same level and the stumps joined with plasma by the method of Young and Medawar (1940). The effect of the operation was in all cases a complete motor and sensory paralysis in the distribution of the peroneal.

In all cases systematic exercise by galvanic current was then carried out on the paralysed muscles of the left leg while the paralysed muscles of the right leg remained untreated. Electrical exercise was carried out daily for 15–20 min. at a current strength of 4–6 mA by means of a dry battery apparatus of 120 volts. This current intensity is sufficient to elicit strong contractions in the individual muscles without apparently giving rise to pain. During the 20 min. of treatment about 500–600 single contractions of the muscles were elicited by means of a cathode in the form of a moist pad 3 mm. in diameter applied to the distal part of the muscle. The anode of a diameter of 8 mm. was applied at the upper insertion points of the paralysed muscles at the level of crista tibiæ. The current was thus directed longitudinally through the muscles. Onset and duration of the electrical treatment applied in the individual cases is shown in the table.

Rabbit	Galvanic treatment after op. (days)		Time of functional recovery after op. (days)		Circumference of leg at end of treatment (mm.)		Direct faradic excitability of anterior tibial muscle				Weight of anterior tibial muscle (g.)	
							via skin at end of treatment		exposed at biopsy			
							Coil distance (cm.)					
	st	dur	tr	untr	tr	untr	tr	untr	tr	untr	tr	untr
PERONEAL NERVE CRUSHED												
A	1	125	48	48	90	88	12·6	10·8	27	21	3·72	3·41
B	7	46	39	40	76	74	10·6	8·2	40	23	2·40	1·65
C	20	34	41	41	79	75	8·5	7·5	..	..	1·35	0·95
D	20	34	41	43	81	78	..	..	38	30	1·94	1·32
PERONEAL NERVE CUT												
E	7	87	74	79	96	91	9·8	7·7	31	23	3·16	1·92
F	28	35	53	56	84	78	9·5	7·8	34	22	2·45	1·44

st = start; dur = duration; tr = treated.

The following measurements were made on both sides of the operated animals during the treatment: weekly measurements of the circumference of the leg 15 mm. below crista tibiæ; fortnightly measurements of the direct excitability of the muscles by faradism applied through the skin; time and quality of functional recovery. At the end of treatment a biopsy was done under 'Nembutal' anæsthesia, after exposing the muscles on either side. The following observations were made on both sides: macroscopical appearance of the muscles; direct and indirect excitability of tibialis anterior, extensor digitorum and peronæus longus; weight of the extirpated individual muscles; histological examination of the muscles.

RESULTS

During the first two weeks after operation electrotherapy did not prevent atrophy (fig. 1). During the subsequent weeks, however, circumference decreased more slowly on the treated side in all animals. This effect started within 10–14 days after the onset of treatment. In no case did the atrophy of the treated side reach such an extreme degree as that of the untreated side. Moreover, in all cases the exercise accelerated the recovery from atrophy once the muscles had become re-innervated, and the circumference of the leg on the treated side reached its normal measurement more quickly than on the untreated side (fig. 1). This was particularly noticeable in those cases in which the peroneal nerve was cut and sutured.

During the time of treatment individual muscles were stimulated through the skin under light ether anæsthesia by means of a faradic coil and a fine bipolar copper electrode. While in men the direct excitability of denervated muscles to faradic stimulation via the skin is generally abolished soon after denervation, in the rabbit

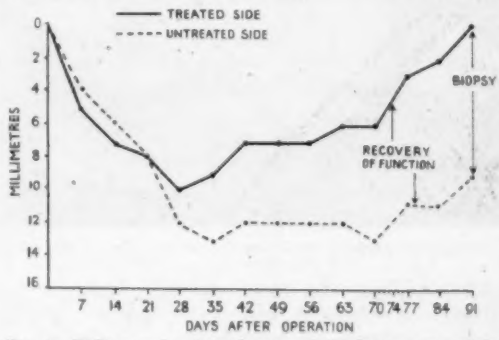

FIG. 1—Difference in circumference of the legs, measured by cotton thread, of rabbit E, in which the peroneal nerve was cut and sutured with plasma 74 mm. above the muscle.

the direct excitability of denervated muscles is maintained for a long period. Both treated and untreated muscles, however, showed an increasingly sluggish reaction and higher threshold of excitability, particularly in the later stages of denervation. But the diminution in direct excitability was undoubtedly less on the treated side, and the threshold, expressed in terms of coil distance, was lower than that on the untreated side (see table). Furthermore, the muscles of the treated side showed a greater power and rapidity of contraction than those of the untreated side.

Recovery of function was recognised by the toe-spreading reflex, the muscles involved in this reflex being innervated by the peroneal nerve. There was either no difference in the time of recovery or only a slight difference in favour of the treated side. In all cases, however, the spreading was more powerful on the treated side, again particularly in those cases in which the nerve was cut and joined.

At various intervals after recovery of function a biopsy was made. In all cases there was a striking difference in the appearance of the exposed muscles; the muscles on the treated side were undoubtedly larger than those of the untreated one, and seen by the naked eye

* With a grant from the Nuffield Committee for the Advancement of Medicine.

hardly differed from normal muscles (fig. 2). In all cases there was a definitely lower threshold of direct faradic excitability of the exposed muscles on the treated side. Even in rabbit A, which was examined 2½ months after recovery of function, the muscles still showed a lower threshold on the treated side though in this case the difference was less pronounced (see table). The contractions of the treated side were brisker and more powerful, especially in those cases in which the peroneal nerve had been cut. On testing the indirect excitability no decisive difference could be found between the two sides.

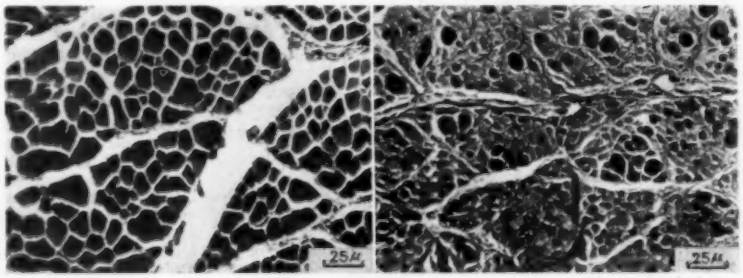

FIG. 3—Cross-sections of treated and untreated muscles of rabbit E (fixed in formol-saline; Masson stain).

At the end of biopsy the tibialis anterior, extensor digitorum and peroneus longus muscles were excised at the insertion points and weighed. Care was taken to remove the muscles in the same way on both sides. There was in all cases a considerable difference in favour of the treated side, especially in the tibialis anterior (see table). The muscles were fixed in formalin, embedded in paraffin and stained by either the Masson or the Mallory trichrome technique. Both transverse and longitudinal sections were made. Sections from the treated and untreated side of the same muscle were mounted on the same slide and thus stained identically, in order that the histological picture should be strictly comparable. The sections showed that the muscle-fibres on the treated side were of greater diameter and with more apparent cross striation. The treated muscles showed a thinner outer connective-tissue sheath and

FIG. 2—Tibialis anterior muscles of the treated and untreated legs of rabbit E.

there was much less connective tissue between the individual muscle-fibres than in the untreated muscles (fig. 3).

DISCUSSION

On these results, there cannot be any doubt that the galvanic exercise treatment described had a beneficial effect on the denervated muscles. In no case did the atrophy of the muscles on the treated side reach such a high degree as on the untreated side. Although the treatment was not able entirely to prevent the onset and progress of atrophy immediately after denervation, it definitely delayed and diminished the atrophy in later stages, and accelerated the return of the volume of the muscle to its preoperative size. The histological findings eliminate the suspicion that the greater volume of the treated muscle might be the effect of a hypertrophy of the connective tissue: exactly the reverse is found—the treated muscles show far less fibrosis.

The difference in volume of muscle in favour of the treated side was particularly obvious in the tibialis anterior. This muscle gives the greatest field of action for the current on account of its superficial position, and it was therefore the most exercised muscle; this supports the opinion that the galvanic exercise treatment is the more successful the more the individual muscles are exercised. The better quality of muscle action on the treated side after recovery of function was also obvious in the more powerful spreading of the toes, particularly in those cases in which the nerve was cut. Thus the treatment was sufficient to protect the denervated muscle to some extent from the loss of those factors which are essential for its normal and powerful action when it becomes re-innervated—namely, good "trophic" condition, low threshold of excitability and prompt contractility. The treatment therefore undoubtedly leaves the muscle in a more favourable state for recovery. The difference between the treated and untreated muscle could still be shown two months after the return of the reflexes.

SUMMARY

Galvanic exercise of denervated muscles of the rabbit was found to delay and diminish muscle atrophy and to accelerate the return of muscle to its initial volume after re-innervation.

Treated muscles showed less fibrosis, and larger muscle-fibres with more definite striation than untreated muscles.

Treated muscles showed a better excitability and contractility on direct stimulation and stronger reflex action than untreated muscles.

The more superficial the position of a muscle the more did it show the effect of treatment.

We wish to thank Mr. J. Z. Young for his advice and help in revision of this paper, and the Nuffield Committee for the Advancement of Medicine and the Rockefeller Foundation for their aid.

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Medical Societies

ROYAL SOCIETY OF MEDICINE

AT a meeting of the section for the Study of Diseases in Children on Jan. 23, with Dr. A. G. MAITLAND-JONES, the president, in the chair, a discussion on

Intracranial Injuries in Childhood

was opened by Mr. D. W. C. NORTHFIELD. He reviewed 43 cases of head injury in children aged from three months to fourteen years, 16 being aid-raid casualties. The brain injury was closed in 35 cases and in these there had been a high proportion of vault fractures, 15 having been verified by X rays. Consciousness had been lost in 13 of the 35 and abnormal signs had been elicited in 11. In only 4 was the brain injury clinically severe and none had died, though 2 had developed epilepsy. The classical adult symptoms of major cerebral contusion had been present in 16 cases. In addition, there had been 8 compound fractures of the skull, of which 3 were severe; one had died of streptococcal septicæmia and another of intracranial hæmorrhage; 6 had been air-raid casualties. Children on the whole seemed to tolerate head injury remarkably well and to recover quickly—perhaps because of the elasticity of their skulls. Hæmatoma of the scalp was frequent in children, and in a day or two its edges became indurated so that it simulated a depressed fracture, needing X rays for diagnosis. A

fissured fracture, closed, had been shown in 8 cases of cephalhæmatoma. In 26 cases there had been acute brain injury, as indicated by unconsciousness, neurological signs or symptoms of abnormal mental activity. Transient unconsciousness might be impossible to establish by evidence, but traumatic amnesia for the incident might be accepted as an indication that it had occurred. The neurological signs, seen in 9 cases, all disappeared quickly. The commonest appearances were, in order, unconsciousness with signs, signs with symptoms, and symptoms only. The symptoms of major cerebral contusion had been present in only 2 of the cases of compound fracture. Abnormal signs were commoner and more likely to be permanent than in the closed cases. Of 15 cases of closed injury followed up, all were now normal except for 4 cases of occasional headache and 3 of nocturnal restlessness. A baby of nine months tumbled from the back seat of the floor of a car when the brakes were applied and had no immediate signs, but showed epileptic symptoms for some hours later on; after five years on phenobarbitone she still had occasional twitching but was otherwise normal. Early traumatic epilepsy seemed of better prognosis than that which appeared some two years after an injury. Scalp wounds must never be regarded as unimportant; a fracture must always be suspected and surgical treatment applied. The frequency of fracture and cephalhæmatoma characterised head injuries in children. Concussion was not a grave injury in a child. The elasticity and fragility of the child's skull both tended to block the passage of acceleration through the cranium. Restlessness might indicate some persistent mental stress not otherwise obvious.

Dr. W. G. WYLLIE said that the differences between the young and the mature in head injuries, both in immediate and remote reactions, were illustrated by a study of cases of the closed type, or open type with minor injuries only. The damage was produced by a violent movement of the head against a solid substance, which was different from the impact of a solid object on a stationary head. In childhood the injury was nearly always the "moving-head type"; and the three outstanding characteristics were the rarity of scalp wounds, the high incidence of fissured fracture and the frequency of concussion. The sutural flexibility of the child's skull might suggest that a higher degree of distortion would be required to produce a bursting or fissured fracture, but in fact the opposite was the case because of the greater thinness and fragility of the child's skull. Infants with fissure fractures often showed no symptoms. Until recently concussion had been ascribed either to jarring of neurones or to momentary deformity of the skull and sudden anæmia due to collapse of cerebral vessels. The work of Denny-Brown and Ritchie Russell yielded no evidence of raised pressure, and suggested that concussion was a traumatic paralysis of neural function in the absence of lesions. There was a steady gain of momentum in the moving head and sudden cessation as it struck the hard object. The far side had greater momentum and moved further; hence the greater frequency of contrecoup injury. The stationary-head injury far less often showed concussion. A long state of stupor followed by intellectual impairment might arise by the same mechanism which produced momentary concussion with classical symptoms. Sometimes autopsy revealed small petechial hæmorrhages in the brain stem and these might stimulate or, if more severe, paralyse the cerebral circulation. Clinically it was often very difficult to distinguish between subarachnoid hæmorrhage, contusion or grazing of the cortex, subdural and extradural hæmorrhage, and cerebral œdema. Subarachnoid hæmorrhage, within half an hour or so, produced intense headache, unconsciousness and pyrexia from the aseptic meningitis. The cerebrospinal fluid was intimately and profusely red. Grazing caused a monoplegia, or palsy of an arm and the face, or an arm and leg. Jacksonian epilepsy might appear, but not perhaps for two or three days. The fluid might be slightly stained, but was not much help. Extradural hæmorrhage showed hemiplegia in one or two days, with Jacksonian epilepsy and the fluid might be normal or yellowish with raised protein. Subdural hæmatoma meant an encapsulated collection of blood, accumulating very slowly. It occurred at the extremes of life and was rare in the head injuries of children. It appeared as an infantile pachymeningitis hæmorrhagica with no known injury.' Cerebral œdema was insufficiently recognised as a common result of head injuries. It occurred locally round injuries, and at the poles in concussion, often about the fourth day after concussion and a lucid interval, causing irritability, dilated pupils and stupor, and a swelling which never covered half the cranium. The fluid was normal. The danger of a fracture was that it might be compound into the ear or nose and meningitis might appear with great rapidity. Pupillary changes did not necessarily indicate hemisphere or ventricle lesions, but were usually due to changes in the brain stem. Concussion might cause a violent movement of fluid through the aqueduct of Sylvius or pressure of the quadrigeminal plate against the tentorium cerebelli and small hæmorrhages in these regions accounted for most pupillary changes. Low fluid pressure readings were commoner than high ones in head injury, and normal readings were usual. There was no evidence that raised intracranial pressure caused death in head injury. Therefore lumbar puncture was not a useful procedure. The sequelæ of head injury included cortical defects at the summit of convolutions and demyelination in the underlying white matter, and these might be present without any symptoms or signs noticeable to the family. Diabetes insipidus and obesity with bulimia had followed fissured fracture reaching to the base. Children escaped headache and mental disturbance far more than adults, and seldom showed any loss of initiative. This was probably related to the relative lack of elaboration of their mental processes. Nevertheless a child occasionally did badly after a head injury.

Mr. G. H. MACNAB thought that fragmented bone at the base of an adult fracture might cause laceration and hæmorrhage, but that an injury to the elastic skull of a child might safely be watched for three or four weeks. He had never seen epilepsy develop later. In a series of cases of concussion in children he had found signs of irritability much more common in fissured fractures. Persistent vomiting was taken as a sign of cerebral disturbance in closed injury of adults, but might be well-marked in children who made excellent recoveries. A baby aged five months which had been blown out of its mother's arms during the blitz had shown an enormous hæmatoma and, as this subsided, a fissured fracture in the parietal bone. It now had a wide deficiency in the bone and a cephalhæmatocele, but had had very few symptoms at the time. Possibly it had an underlying hydrocephalus for which the cephalhæmatocele was compensatory, or possibly an area of bone had been isolated and absorbed with the hæmatoma.

Mr. J. E. A. O'CONNELL said that all his 102 cases of closed injuries had been concussed, but naturally a child without a scalp wound would never be brought to hospital unless it showed loss of consciousness. Pupillary changes were one of the best localising guides to intracranial hæmorrhage; on the side of the bleeding the pupil dilated. Dilatation of the lateral ventricle, pushing a fracture apart, was common in children, though the reason was not clear. The result was a ventricular cyst, not a meningeal collection of fluid.

The CHAIRMAN suggested that a conservative attitude should be taken to depressed fractures in infants; he had always left them alone and had never seen any ill effects. He asked also what type of injury ought to be sent to a special neurosurgical head centre.

Dr. A. G. SIGNY doubted whether the skull of a child over three years was really more elastic than that of a young adult. He thought the injuries would be very different if classed as over or under the age of five years. He had performed autopsy on a number of older children who had died almost at once after a closed head injury.

ROYAL SOCIETY OF MEDICINE.—The section of therapeutics and pharmacology of this society will meet on Tuesday, Feb. 10, at 2.30 P.M., when Dr. Harold Scarborough and Dr. R. G. Macfarlane will open a discussion on vitamins and hæmorrhagic states. There will be a discussion on war injuries in relation to neurosurgery and ophthalmology on Friday, Feb. 13, at 3.30 P.M., at a joint meeting of the sections of neurology and ophthalmology. The clinical section will meet on the same day at 2.15 P.M. at King's College Hospital.

Reviews of Books

British Medicine

R. MCNAIR WILSON, M.B. Glasg. London: Collins. Pp. 49. 3s. 6d.

IT is hard to put a finger on any scientific discovery and say "this is British," or "this is French." Neptune, after long suspicion, swam into the view of Adams and Leverrier almost at the same moment. And who shall now decide between Lamarck and Darwin? The most we can do is to trace the trend of national development, and point out those discoveries in whose inception British influence was predominant. When the result has to be compressed into fifty pages and dished up in a form palatable to the lay mind, the task might seem hopeless. Dr. McNair Wilson has tackled it skilfully, and gives us a list of names of which Britain may be proud. Though dealing necessarily with persons rather than with movements, he assigns to us an individual rôle in the drama of science. Britain's place has been the bedside rather than the laboratory, and the part she has played has resulted from observation of the patient rather than from abstract reasoning. Thus Jenner by observation founded the science of immunology, and Lister, inspired by the laboratory work of Pasteur, evolved the principles of antiseptic surgery. The tradition has been followed through Ross and Banting to the present day, when the sulphanilamides, first used in Germany, are being developed through the practical sagacity of Englishmen. All the illustrations are interesting, and some of them are good reproductions.

Sulphanilamide and Related Compounds in General Practice

WESLEY W. SPINK, M.D., associate professor of medicine, University of Minnesota. Chicago: The Year Book Publishers; London: H. K. Lewis. Pp. 256. 16s. 6d.

THE rapid increase in knowledge about the sulphonamides makes it difficult to present in book form any satisfactory survey of the subject, because it may easily be old-fashioned by the time of publication; but most practitioners will welcome Professor Spink's up-to-date book which must have been rushed through the presses at a rate to cause envy in publishing houses in England today. He sets out conveniently details about the sulphonamides as currently used in the United States; British readers will note the absence of reference to several useful compounds with which they are familiar.

Good horse-sense tempers the recommendations for the clinical use of the drugs. Professor Spink insists on the need for bacteriological diagnosis if the most appropriate treatment is to be applied; and he points out how important it is to adjust dosage by the blood-concentration level, particularly in severe infections. Referring to the work of Banks on the use of sulphathiazole in meningococcal meningitis, he suggests that the action of drugs in this disease may not be directly related to their concentration in the cerebrospinal fluid—an anomaly which might be explained if meningitis ultimately turns out to be an incident in generalised meningococcal infection. The account given of acute staphylococcal disease is perhaps a little optimistic judged by the experience of others; he makes the common error of not assessing the severity of septicæmic cases by quantitative blood-culture. In a book primarily intended for general practitioners the chapter on the toxic manifestations of sulphonamides is most valuable, and the references given in it are, as elsewhere, first class. The indications for sulphaguanidine and sulphadiazine are briefly surveyed. They are interesting drugs, but Professor Spink does not recommend their general adoption to the exclusion of compounds which are on the whole more active.

Accidental Injuries

(2nd ed.) HENRY KESSLER, M.D., F.A.C.S. London: Henry Kimpton. Pp. 803. 45s.

Dr. Kessler is most widely known for his work on the rehabilitation of the crippled. This book, a record of his experience as medical adviser to the New Jersey Workmen's Compensation Bureau, includes a study of the laws of workmen's compensation in various states of North America, and compares and contrasts them with those of other states throughout the world. In this country absolute deafness is considered to be as incapacitating as total blindness, and it is noteworthy that in five of the United States a higher degree of compensation is given for the loss of sight of one eye than for the loss of hearing in both ears. In order to receive compensation, the English workman has only to establish aggravation, acceleration or precipitation by the injury of the disease causing incapacity, and his disability is then treated as entirely due to his injury. In some of the United States, however, it is necessary for the referee to determine what portion of incapacity was inevitable from the disease and what portion was due to the acceleration or aggravation by the injury. As Dr. Kessler says, "to the question of the extent of aggravation the only answer is a guess." Later in the book he discusses causes and mechanics of injury with their resulting disabilities and attempts to evaluate the end-result of each injury as a percentage disability. This will not materially help the examiner in Great Britain to assess capacity for earning, as Dr. Kessler fully realises. He quotes Anderson's figures in evidence of the versatility of handicapped men.

There are a few small omissions; the loss of balance after amputation of the great toe is not mentioned, though this injury may constitute a far greater percentage disability than any of those listed. Hallux rigidus, one of the commonest causes of partial incapacity after fractures of the long bones of the lower limbs, is also left out. Moreover, many cases of fracture of the patella and the olecranon are now being treated by excision of bone fragments, and Dr. Kessler's opinion on resulting disability in such cases would be valuable. The chapter on rehabilitation does not give any comprehensive survey of his great work in the restoration of the cripple to industry, but it whets the reader's appetite for more.

Essentials of Endocrinology

ARTHUR GROLLMAN, M.D., associate professor of pharmacology and experimental therapeutics, Johns Hopkins University. London: J. B. Lippincott Company. Pp. 480. 36s.

THE general practitioner has long awaited a satisfactory textbook of endocrinology, but two difficulties always stand in the way of gratifying him: knowledge in this field advances so rapidly that any textbook is out of date before it is finished, let alone published; and the scope of the subject is so wide that no one man can tackle it with uniform skill. In this book Professor Grollman has encountered both hindrances. The pituitary, that labyrinthine problem, has betrayed him into various errors of omission. In future editions he may find there is more to say about the functions of the pars intermedia in man, and will doubtless make some mention of the work of O'Donovan and Collip on the metabolism hormone, of Gersh on the rôle of the pituitary in the metabolism of water, of the estimation of the 17-ketosteroids in the differential diagnosis of Cushing's syndrome, and of the beneficial effects of pregnancy in Simmonds's disease. The possible influence of the thyrotropic factor in the production of Graves's disease is also dismissed without adequate discussion; but after all, it is only fifty years since a professor of anatomy at Cambridge shrugged away the whole pituitary. Other glands come off better at Professor Grollman's hands, though much of the modern work on diabetes and carbohydrate and fat metabolism is omitted, and the use of male hormones in chronic mastitis is not mentioned. Sins of commission are rarer, but few would share his hopelessness about infantilism or accept unqualified his statement that the adrenal cortex does not normally exert any androgenic activity; and it should be noted that œstrogenic treatment of chronic mastitis is a thing of the past. A reference to promising "preliminary" reports on the action of desoxycorticosterone reminds us how great is the lag between journals and textbooks. But the work is pleasantly sceptical, avoids those flights of fancy which mar many books on endocrinology, and is easy to read. The chapters on the parathyroids and sex determination are outstandingly good and throughout the author holds a just balance between evidence derived from experimental biology and clinical observation.

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THE LANCET

LONDON: SATURDAY, FEBRUARY 7, 1942

SYNTHETIC CREAM

In the summer and autumn of last year there were several large outbreaks of paratyphoid fever, notably in the urban areas of Birmingham,[1] Liverpool [2] and Bristol.[3] In most of these synthetic cream was the proved or suspected vehicle of spread, and as a result this new ersatz luxury in our diet came, and still is, under considerable suspicion. Synthetic cream as now made by reputable firms—mostly in the London area—is a mixture of flour, dried egg-yolk, sugar and water with a vegetable fat, usually ground-nut oil. The flour and water paste is heated to 210° F. for 30 minutes and then cooled; the egg-yolk powder and sugar are added; the fat is melted separately, held at 145° F. and atomised under high pressure into the starchy paste. The whole mixture is further heated at 160–170° F. for 30 minutes, homogenised, and then cooled to 40° F. over brine coolers. It is finally piped mechanically into new but unsterilised tins, the lids of which are pressed on by hand and tightened by a mechanical expanding tool. Obviously there is no guarantee that the synthetic cream may not become contaminated at the manufacturing plant but the pasteurisation of the mixture and the largely mechanical handling reduces this risk very considerably. Further, the widespread epidemics naturally brought suspicion on the manufacturers, who as a result have taken additional precautions which usually include a regular bacteriological test of their products. Their premises must also conform with the requirements of the new Food and Drugs Act, but as an additional precaution it might be advisable to license all makers of this now popular product.

There is a risk of contamination en route from manufacturer to retailer or bakery, but the most likely locus of infection is the bakery, often a large establishment supplying bread and confectionery to many retail shops in the area. Here the risk of cream becoming infected by human handlers is much greater than at the factory, and here in fact the epidemiologist has mostly fixed the blame for the recent outbreaks. Warin,[1] in his report of three outbreaks in the Birmingham area, concluded that the infection always originated in one or other bakery and not at the manufacturer's; no other reasonable explanation fitted the epidemiological data, for cream from the same factories was being distributed to many other areas which remained free of paratyphoid. Bakehouses have not always established a good reputation for maintaining the high standard of general and personal hygiene which the handling of contaminable foodstuffs demands, and cream, whether natural or synthetic, has been incriminated as the vehicle in many outbreaks of intestinal infections, large and small. The chance of foodstuffs becoming contaminated by human carriers of an intestinal pathogen is greatest if the disease is of a kind which includes among its victims a proportion of mild infections and transient carriers who continue at work while excreting the organism. Paratyphoid is now, probably more than some years ago, such an infection—for example, in the recent epidemics the fatality ranged from 0·8% at Bristol and just over 1% in Liverpool to 3·5% in one of the Birmingham outbreaks. For the discovery of the carrier or ambulant case, the Widal test is not now regarded as wholly reliable, for transient carriers may not show any specific antibodies in the blood. However, it may still be a useful preliminary examination in tracking infected persons among a large staff of workers. In a Birmingham outbreak, of a staff of 91 whose bloods were tested, 13 gave positive Widal tests and 6 of these were found to be excreting paratyphoid bacilli; in Liverpool 10 excretors were found among 53 persons with positive Widal tests (out of some 200 examined at a bakery). The important point is that only 3 of these 23 excretors were clinically ill. In the Bristol outbreak the source of infection was ascribed to a girl who did not develop a clinical attack of paratyphoid until 3–4 weeks after she had infected the cream. Thus, when paratyphoid is endemic in an area, and conditions are suitable for epidemic spread, any large establishment may have its quota of transient carriers and ambulant cases; if that establishment is concerned in the distribution of foodstuffs, the chance of its being a focus of spread becomes considerable.

Prevention must be largely directed to raising the standard of personal hygiene among the personnel of any business concerned in the handling of food, particularly cooked or prepared foods and milk. The new Food and Drugs Act which came into force in 1939 requires the installation of washhand basins, towels and soap in all such premises. The MOH through his sanitary inspector, in amicable coöperation with the managerial staff, must educate the handlers of foodstuffs in the attendant dangers and their mode of prevention. He will find much practical advice on this subject in the review written by the late W. M. Scott,[4] than whom no-one was better qualified to give it.

THE INTERNAL CARTILAGE

The internal semilunar cartilage is always a common offender, but particularly so in war-time when knees are exposed to unaccustomed strains, and the busy surgeon may save his time by pausing to question his diagnostic criteria and assess the rationale of his treatment. Cravener and MacElroy,[5] surveying some 1700 cases, emphasise that the prognosis is really determined by whether the injury involves the vascular periphery of the cartilage or the avascular central portion. If the tear is in the former situation, as it is in 55% of cases, healing by fibrous tissue will follow strict immobilisation; in the remaining 45% it will lead to non-union with persistence of symptoms. In their series 43% of the injuries were in the region of the anterior horn and anterior cruciate ligament, and 41% were simple or complex bucket-handle tears, while the posterior horn was affected in only 7·5%; some degree of dislocation occurred in 24·5% of the total, and mainly of the anterior end. Clinically the most important diagnostic symptoms were found to be pain, instability and intermittent swelling; locking was reported in less than a third of the cases and could not be regarded as an essential part of the picture.

1. Warin, J. F. *Med. Offr.* Jan. 17, 1942, p. 21.
2. Holt, H. D., Vaughan, A. C. T. and Wright, H. D. *Lancet*, Jan. 31, 1942, p. 133.
3. Davies, I. G., Cooper, K. E. and Fleming, D. S. *Ibid.* p. 129.
4. Scott, W. M. *Ibid.* 1941, ii, 389.
5. Cravener, E. K., MacElroy, D. G. *J. Amer. med. Ass.* 1941, **117**, 1695.

Pain on forced rotation, local tenderness and limitation of movement were the most valuable physical signs, and a displaced portion of cartilage was palpable in only 2% of the series. The average age was 29, and 86% of the patients were male, with a preponderance of rather sedentary overweight people. There is some evidence that the femoral obliquity associated with a wide pelvis is a predisposing factor. The average bicristal index—the percentage ratio of bicristal diameter to body-length—was 158, compared with 154 in normal subjects; and though the incidence in women is not as high as might be expected if pelvic width is of significance, an investigation of women exposed to unusual strain in physical-training schools revealed symptoms of cartilage trouble in up to 50%. Conservative treatment by plaster fixation in slight flexion for six weeks was used at first in all cases. After this patients were discharged without restriction and two subsequent attacks were taken as indication for operation. Just over half of the cases recovered with conservative treatment only, and of the remainder operated on about a quarter were left with persistent symptoms. Operative failure was ascribed to misdiagnosis, incomplete removal, damage to articular cartilage or internal lateral ligament, or to regeneration of the semilunar cartilage. The optimum time for operation was taken as between six weeks and six months after injury, and the average recovery period was 35 days. KOESTLER [6] has confirmed experimentally that healing of the cartilage depends on the blood-supply at the point of injury, and has also demonstrated that interference with the vessels running to the periphery of the cartilage by ligation, operative exposure and even hypermobility may lead to permanent degeneration and damage of the whole structure. ROSTOCK [7] also relies on initial immobilisation in all cases, and considers that operative failure is often due to regeneration; his figure of 20% of failures corresponds closely with that of CRAVENER and MACELROY, and with the 25% reported by VANDENDORP and his colleagues.[8]

The frequent difficulty in diagnosis has given rise to much ingenuity in developing radiographic methods of investigation. RUBIN [9] has shown that the semilunar and articular cartilages can be delineated by forced abduction of the joint, because of the exudation of gas from the synovial fluid as the intra-articular tension is reduced; and this may be sufficient to outline a displaced or torn cartilage, though it does not occur in the presence of an effusion of more than 5 c.cm. This phenomenon, originally described by DITTMAR,[10] can be reproduced in most synovial joints, but is only of value diagnostically when positive. LINDBLOM [11] considers that arthrography with diodone is justifiable, and if this seems an elaborate technique for a homely lesion it only reflects the general feeling that hit-or-miss arthrotomy for vague knee-joint symptoms should become a thing of the past. Certainly there is a strong case for conservatism in treating the first attack; and the Army's protection of the soldier's knee from the attention of other than orthopædic surgeons is not unreasonable when the proportion of operative failures is borne in mind.

6. Koestler, J. *Arch. klin. Chir.* 1940, **199**, 49; *Surg. Gynec. Obstet.* November, 1940, suppl.
7. Rostock, P. *Ibid*, 1940, **200**, 456.
8. Vandendorp, Bastien, Vandecasteele, *Rev. Orthopéd.* 1940, **26**, 629.
9. Rubin, E. L. *Brit. J. Radiol.* 1939, **12**, 649.
10. Dittmar, O. *Röntgenpraxis*, 1932, **4**, 442.
11. Lindblom, K. *Acta radiol., Stockh.* 1940, **21**, 274.

STIGMA

"HE's not mental, doctor, it's his nerves." Most of us have heard this plea, which sets up metaphysical problems that are best let alone; the terminology gives us enough to think about. The wisdom of our forefathers tells us that names can influence man's behaviour but cannot alter things. *Give a dog a bad name and hang him*: but *a rose by any other name would smell as sweet*. Yet we act as if there were a verbal magic that can strip things of their qualities by altering their names, and the more we fail the more we try. For a necessary item of domestic architecture jakes was a good enough name in Tudor times; privy, elegant and well-connected, came into favour and disfavour nearer our own day; water-closet followed; now comes lavatory, and we are ready to speak of the lavatory seat without giving a thought to our defiance of etymology, even though we have the choice of toilet (ladies' or gents'). Both these will go, for we shall continue our attempt to deny the undefined but blameworthy quality of man or thing, that persists in attaching itself to what are originally the nicest of words. This attempt harms no one individually, any more than does the displacement of napkin by serviette, or the surgeon's discarding of belly for abdomen already favoured by the more polite physician, the layman having forestalled both by extending the stomach boundaries from ensiform to pubes.

The anxious relative's "mental" marks, however, a stage in another verbal evolution involving an obloquy that falls severely upon a few. We are all guilty of a lack of niceness, what with our bellies and our need for privies, but only some of us are mad. Now "madness" is a word, direct and simple, that can give dignity and pathos to our language. *His madness is poor Hamlet's enemy* would lose by any substitution. But "madhouse" inevitably carried with it bad associations in earlier days; changed outlook and methods seemed to call for change of name, so the madhouse became the lunatic asylum, and no name could be more fitting than asylum—a refuge for old or young, mad or sane. Yet with such a change persists a stigma, resting ultimately on the patient or the illness, and symbolised by the name of the home that shelters him. Years ago the village of Colney Hatch lay just north of London, and nearby was set up an asylum that chanced to become well known, by name at least, to the Londoner, and as an expression of the stigma "Colney Hatch" grew into his idiom and became familiar in his mouth as household words. Then suburbia began to stretch northwards, but no-one would willingly "go to Colney Hatch." So the village and the asylum were both re-christened and Colney Hatch as a place-name disappeared. It faded too from Cockney idiom, but the less specific "lunatic asylum" remained in service till in the next stage of verbal evolution it became the "mental hospital." The stigma kept up the chase, once more debasing our language so that now one of us might ask "Was Hamlet mental?" and be understood and unrebuked. The Bethlem people must have been stout fellows when they stood by their name in spite

of the corruption into Bedlam ; they now have their reward in the readiness of patients' relatives to send them to Bethlem Royal Hospital rather than to any institution with mental in its title.

The antithetical " nerves " has kept its virtue for generations. Its congener " neurosis " has had many ups and downs and now may be used with whatsoever meaning the user likes. " Neurotic," however, has grown its own particular stigma. Indeed, the choice of idiomatic subtleties is so great that for purposes of tact we might usefully conjugate an imaginary verb, present indicative, thus :

I am highly strung	We are nervy
Thou art nervous	You are neurasthenic
He has a neurosis	They are neurotic

But none of us or our real friends must be " mental " at any cost.

CONTROL OF YELLOW FEVER

BEFORE the summer of 1940, the Office Internationale d'Hygiène Publique, in Paris, was responsible for coördinating the control of yellow fever along traffic routes. Nowadays traffic is doing unusual things and the Office Internationale is out of action. An interdepartmental committee has therefore been set up under the chairmanship of the medical adviser to the Secretary of State for the Colonies to plan measures for yellow-fever control. The Fighting Services, the Foreign Office, the India, Dominions and Colonial Offices, the governments of South Africa and Southern Rhodesia, and the Ministry of Health are represented on it. Seven principal lines of attack have been accepted : early detection, correct diagnosis, notification and isolation of cases ; inoculation of all travellers in or passing through endemic areas ; effective quarantine, with screened accommodation, for the non-immunised ; destruction of insects in aircraft passing through endemic areas ; control of vectors, particularly near aerodromes ; special measures of control at aerodromes ; and research.

Endemic areas are those in which yellow fever exists in a form clinically and biologically recognisable. Thanks to examination of the liver by viscerotomy in fatal cases and to the mouse-protection test [1] it is nowadays possible to diagnose endemic yellow fever in supposedly silent areas. Wherever the presence of the disease is established, the committee recommend that samples of blood for a mouse-protection test should be taken at an early stage from every person suffering from an undiagnosed fever, and stored at low temperature until it can be sent to a laboratory. When a patient dies within 10 days of the onset of such an illness a specimen of liver should be taken for examination. Viscerotome specimens should be examined by pathologists experienced in the histology of yellow fever, and if the diagnosis needs confirmation specimens from East Africa should be sent to the Yellow Fever Research Laboratory at Entebbe, Uganda, and those from West Africa to the Medical Research Institute at Yaba, Nigeria. People likely to travel by air through the zone between 14° N. and the southern boundaries of the Belgian Congo and Tanganyika, and all non-Africans living in or visiting that zone, should be immunised against yellow fever. For residents, inoculation should be repeated every two years, and inoculation should be compulsory for those taking up new appointments. The governments of British East and West Africa and of the Anglo-Egyptian Sudan are advised to take powers to enforce compulsory inoculation in any area or of any group of people they think necessary. The regular staff of all aerodromes should be inoculated and so should casual labourers to the fullest extent possible. Inoculation is not fully protective until the tenth day, so that there are difficulties about applying it to casual labourers ; but the committee feel that the recommendation may help to keep down the numbers of casual workers employed until group inoculation of the populations round aerodromes can be carried out. Stocks of vaccine must be often examined to make sure that their immunising properties are active. The quarantine period is accepted as 6 days. People arriving from endemic areas, if not immune, should be quarantined in properly screened quarters for 6 days. Those who have been inoculated more than 9 days and less than 2 years before entering the endemic area, or have recovered from an attack of yellow fever, can be allowed to go on their way. Those who are inoculated while in an endemic area and leave it within 9 days of the date of inoculation must be quarantined for 6 days after leaving the endemic area. If they leave the area between the 9th and the 15th day after inoculation they must be quarantined for the balance of the 15 days ; this is necessary because the 9th day is the last on which the inoculated person can take the infection, and a further 6 days cover the incubation period of the disease. There is no scientific evidence that the yellow-fever vaccine now in use causes transmissible virus to circulate in the blood-stream, and regulations restricting movements of inoculated people based on the belief that it does should be revised. Certificates of non-exposure to infection should no longer be accepted, since they are difficult to verify. Insecticides should be used in aircraft before they leave endemic areas, after the passengers have embarked ; and again when the aircraft have reached their destination and before passengers have disembarked. A hand sprayer connected to a supply of compressed air is recommended instead of the ordinary ' Flit ' gun. Mosquito control, especially of *Aedes ægypti*, in the neighbourhood of aerodromes and ports must be intensified. Mosquitoes are apt to breed on dhows, which should therefore be inspected. Piped water-supplies to towns, ports and aerodromes would help to eliminate breeding places. Special measures for the protection of aerodromes should include the appointment of an inspecting officer ; guards and their dependents should not be housed on the aerodrome if it can be avoided, but where it is necessary they should all be inoculated ; no casual labourers should be housed on the aerodrome. The committee recognise the valuable work on yellow fever which has already been carried out by the Rockefeller Foundation in Africa and by the Wellcome Bureau of Scientific Research. There is need for further study of vectors and of possible reservoir hosts, and the committee advise that research should be coördinated through the Entebbe laboratory.

This comprehensive plan should protect the world against the spread of a dangerous disease ; it only remains to implement it. The committee's recommendations are being sent to all those responsible for taking action.

1. *Lancet*, 1941, i, 451.

Annotations

BLOOD VISCOSITY

ONE of the factors in the peripheral resistance to flow against which the heart has to work is the viscosity of the blood. In mammals the blood is normally about 5 times as viscous as water and the figure for human blood of 4·65 reported by Dr. Evans (p. 162) agrees with previous results. Any increase in blood viscosity is naturally harmful when it increases the work thrown on a heart with reserves of strength seriously diminished by disease; Rogen [1] found that in cases of heart-failure with peripheral congestion, but without œdema, the viscosity of the blood was increased and this was an important factor in maintaining the congestive state. Blood viscosity below normal is usually associated with dilution of the blood and sometimes with œdema; as a rule it is not an advantage but sometimes, as in circulatory collapse, it may be useful. As blood is a compound fluid its viscosity depends on the individual viscosities of the plasma and the red cells and the ratio of plasma to red cells; it is obvious that anæmic blood with its low proportion of red cells, estimated by the hæmatocrit, will be less viscous than normal; anything that leads to dilution of the plasma, such as saline infusion, or the low plasma-protein content of glomerulonephritis, would be expected to lower the blood viscosity. Evans points out that the viscosity of the corpuscles may also vary independently though within fairly narrow limits.

The effects of blood or plasma transfusion on the viscosity of the blood are naturally of practical importance. Will transfusion of whole blood into an anæmic person with a damaged heart cause a sufficient increase in viscosity, and therefore in peripheral resistance, to embarrass the heart? Evans's results show that on the whole there is no significant increase in blood viscosity after whole-blood transfusions of as much as 2 litres; he attributes this unexpected result to a fall in corpuscular viscosity. Plasma transfusions, as was predicted, cause a diminution of blood viscosity—a welcome effect in patients with circulatory collapse, or in those whose blood has become concentrated by loss of fluid from severe burns. Evans has as yet no firm explanation for changes in viscosity during and after parturition.

This work must not be considered in isolation: blood viscosity is but one factor among the many that affect and are affected by changes in the balance of fluid between blood and tissues—changes which are reflected clinically in the state of the circulation.

EARLY DIAGNOSIS OF PERTUSSIS

WHOOPING-COUGH is one of the most difficult infections to diagnose early. Initial pyrexia or upset may be absent, and the catarrhal symptoms may be minimal. Coryza followed by infrequent bouts of coughing, more troublesome at night and often ending in retching or vomiting, will make both parent and doctor suspect the disease, but suspicion is not enough. Diagnosis at this stage is particularly important for the patient, who should be put to bed in an airy room and possibly given 4–5 successive daily doses of pertussis vaccine which may alleviate the infection if given early; and also for his family or school contacts, to whom the patient is most infectious in the first weeks of the disease. A definite diagnosis of pertussis can be made at this catarrhal stage by the cough-plate and Bordet culture medium, but laboratories and clinics where cough-plate diagnosis is available are still limited in this country, and the method is not readily adaptable to general practice. Perhaps in time a more selective medium—as by the addition of penicillin to the Bordet medium—used in conjunction with the laryngeal or postnasal swab will make the early bacteriological diagnosis of pertussis as practicable as that of diphtheria. The need is great, for whooping-cough is among the most crippling infections of childhood. Meanwhile insufficient attention is given, even in hospital, to the blood-changes as an early diagnostic aid. Cruickshank [1] has suggested as the criterion of a diagnostic blood-picture a total white-cell count of 10,000 more than the average for the age, with a relative lymphocytosis of 60–80%; and this blood-picture is usually present in the paroxysmal stage of the disease. Less is known about the blood changes in the catarrhal stage. Donald [2] examined the blood of 16 cases in the second week of infection, and found leucocytosis with relative and absolute lymphocytosis in 14; the other 2 had leucopenia. He used Still's figures as his normal standard for the different ages [3]; on this standard the claim of Gorfinkel [4] that a relative lymphocytosis of 55% in a stained film is diagnostic in the catarrhal stage cannot be altogether substantiated, for at six months the normal proportion of lymphocytes is 57% and at two years 53%. In actual fact, Gorfinkel's 10 cases, examined in the catarrhal stage, were all aged two years or over and in all but one there was a significant relative lymphocytosis. The staining of a blood-film and a differential white-cell count is troublesome in general practice, but the practitioner can take or send a film to a public-health or other laboratory for a report. The fact that pertussis is now generally notifiable should be an added incentive to the doctor to diagnose the infection both early and accurately, and he will thus reduce the risk of exposure to infection of the younger and most susceptible members of the family.

1. Rogen, A. S. *Lancet*, 1940, i, 780.

THIOCYANATES AND HYPERTENSION

IN recent years the response of hypertensive cases to thiocyanates has been studied. The pharmacological properties of these compounds were first investigated by Claude Bernard, although it was not until the turn of the century that the work of Pauli [5] led to their use in attempts to lower high blood-pressures. Their toxic properties rapidly made them unpopular for this purpose until Barker [6] in 1936 introduced a method of controlling their administration by regular estimations of their concentration in the blood. Since then the potassium and sodium salts have been widely used in the United States, but considerable divergence of opinion has developed about their value. Three recent reports from different clinics would seem to summarise the present consensus of opinion on the subject. Barker and his colleagues,[7] as a result of their observations on 246 patients, find that satisfactory results were obtained in 47·5%, but that for this purpose blood thiocyanate concentrations of 8–12 mg. per 100 c.cm. are essential, improvement usually being obtained in 2–4 weeks. Kurtz and his colleagues [8] have treated 50 patients and obtained a "satisfactory" fall in blood-pressure in 78%, the average fall being from 197 to 156 mm. Hg systolic and from 115 to 94 mm. Hg diastolic. They insist that for this line of therapy to be safe adequate laboratory control is essential. Freeman [9] in a much smaller series of 20 cases obtained a significant lowering of the pressure in 15; he too stresses the need for careful constant observation. All the same, it is not really certain that the thiocyanates are harmless. Even Barker, who is one of their keenest supporters, admits their toxicity [10]; and a drug which almost invariably produces fatigue,

1. Cruickshank, R. *Lancet*, 1938, ii, 33.
2. Donald, A. B. *Brit. med. J.* 1939, ii, 613.
3. See Still, G. F. Common Disorders and Diseases of Childhood, London, 1937, p. 699.
4. Gorfinkel, M. *Stk Afr. med. J.* 1941, **15**, 451.
5. Pauli, W. *Münch. med. Wschr.* 1903, **50**, 153.
6. Barker, M. H. *J. Amer. med. Ass.* 1936, **106**, 762.
7. Barker, Lindberg, H. A. and Wald, M. H. *Ibid*, 1941, **117**, 1591.
8. Kurtz, C. M., Shapiro, H. H. and Mills, C. S. *Amer. J. med. Sci.* 1941, **202**, 378.
9. Freeman, I. *Bull. Md. Sch. Med.* 1941, **26**, 109.
10. Wald, Lindberg and Barker, *J. Amer. med. Ass.* 1939, **112**, 1120.

weakness and skin eruptions, and has been known to evoke nausea and vomiting and psychosis, and even occasionally collapse and exfoliative dermatitis is not likely to commend itself to British clinicians, who prefer to feel comfortable about the drugs they use, and if possible to know that their patients are feeling comfortable too. Moreover, individual response to the drug is uneven, the optimum concentration in the blood being produced by very variable dosage, and there seems to be no means of detecting the susceptible individual except by repeated estimations of the blood thiocyanate.

INFANTILE DIARRHŒA AND VOMITING

In the closing years of last century the death-rate from infantile diarrhœa in England and Wales was about 0·7 per 1000 of the population. Before the present war it had dropped to about a tenth (0·08 in 1937, for example). For this amazing fall various factors are given credit, ranging from the advent of the motor-car, which led to the disappearance of manure-laden streets in cities, to the spread of education in mothercraft by the welfare-clinic movement and the vastly increased use of dried milk. But acute gastro-enteritis still remains a menace to infant life and health, especially during the first twelve months of life and there is much that is still mysterious about this malady. In his Bradshaw lecture last year J. C. Spence [1] pleaded for a better organised study of the infantile infections, and G. L. Ormiston's [2] work for the Medical Research Council on epidemic neonatal diarrhœa was a good example of the "field survey" which is needed. Now R. M. Campbell and A. A. Cunningham [3] have reported on 574 infants with gastro-enteritis admitted to the Park Hospital, in south-east London, between January, 1937, and August, 1939. They use the term "alimentary-infectious complex" (or AIC) for their cases, for the series studied was a mixed one, being those infants with diarrhœa which remained after the exclusion of specific gastro-intestinal infections (including dysentery), local causes of diarrhœa, digestive disorders and the parenteral infections or infectious diseases in which diarrhœa was an insignificant symptom. There has been an attempt in recent years to establish the doctrine that infantile diarrhœa is either an infection, usually acquired in hospital or some other institution, or else secondary to a focus of infection such as otitis media. Campbell and Cunningham exclude the first by definition, so to speak, and show that only 30·5% of their 574 infants had any evidence of parenteral infection on admission and clearly such infection was not playing a dominant part in causing diarrhœa and vomiting in every one of these cases. Thus they were studying the ordinary "d and v" of the hospital receiving-room. Nearly 80% of their infants had developed the disease in their own homes, nearly 70% were under nine months of age and more than half the cases began in the five months, June–October. Only 18 infants, or 4·5% of those under nine months, were breast-fed at the onset of the illness and only 3 of these died. Anyone who advises the weaning of a baby on to a bottle—be he medical practitioner, chemist, nurse or lay relative—should realise that he is transferring it from a group in which the mortality from d and v is negligible to one in which it is high. The fatality in the whole of the Park Hospital series was 27·7%, but under nine months it was considerably higher—for the first three-monthly periods of life the rates were 52·2, 58·1 and 62·7%. Age, in fact, seemed to be the most important feature in prognosis, but another emerging from this series is the degree of dehydration, for the death-rate in 283 dehydrated cases was 53%, compared with only 2·7% for the 291 non-dehydrated cases. In the words of our forefathers the inelastic skin is "malum signum." This last observation points the way to what is termed "the most important single factor in treatment"—the relief of dehydration. Campbell and Cunningham advise a starvation period, during which water should frequently be given by mouth in small amounts and if parenteral fluid is not being given concurrently half-normal saline should also be given by mouth. Glucose is later added to alternate feeds and next a careful change is made to a separated dried milk using small feeds at regular intervals. Parenteral fluid is best given, they say, by the continuous subcutaneous route, ringing the changes between normal saline, Ringer's solution and 3% glucose in 0·25% saline. In severely ill patients this should be supplemented in the first twenty-four hours by intraperitoneal or intravenous therapy. Great attention was naturally paid at the Park Hospital—one of the London County Council infectious diseases hospitals—to the general ward management of these infants with diarrhœa. An open ward can only be used with a high risk of complications. Bed isolation is important, with free ventilation, damp or vacuum cleaning, and careful disposal of soiled linen. These measures have a familiar ring in connexion with the modern work on the prevention of wound infection in hospital wards. Campbell and Cunningham recommend "dilution" of acute cases by older infants and convalescent cases, and also a system of "feeders" and "changers" which increases the requirement of nurses but ensures that those responsible for the feeds are not also concerned with the toilet arrangements. Destructable squares are valuable for the acute period of the disease and details are given of a system of movable bins and a general team for changing the babies which again has a familiar ring. So also are the remarks on the possibility of infection being conveyed by bath water. Individual isolation accommodation is the ideal method of dealing with these infants. Authorities are apt to regard this as expensive, but until preventive measures, including a campaign for breast-feeding, are undertaken, the mortality from infantile diarrhœa is too high to allow expense to be used as an excuse for inadequate treatment.

1. *Lancet*, 1941, i, 777. 2. *Ibid*, 1941, ii, 588. 3. *Arch. Dis. Childh.* 1941, **16**, 211.

DIRECT PHOTOGRAPHY OF ANTIGENS AND ANTIBODIES

The electron microscope, by extending resolving power to a practical limit of 50 Angstrom units, has solved several of the structural mysteries of bacteria and other minute bodies. It was obvious that the same instrument would sooner or later throw direct light not only on structure but on mechanisms which hitherto had to be explained mainly by deduction and circumstantial evidence. The lysis of bacteria by phage, the interaction of colloidal gold particles with virus molecules and the combination of virus with antivirus molecules are a few of the biological processes which American workers have already photographed. The electron microscope has now been used to demonstrate the combination of antibodies with flagellar and somatic antigens.[1] A good deal is already known about alterations in cell-walls and in flagella during agglutination of sensitised bacteria and about the combination of antibodies with antigens at bacterial surfaces, but now these changes can be seen in electron pictures. From a hundred measurements of prints of *Bacillus subtilis*, Mudd and Anderson compute that the mean diameter of the flagella of this organism is 186 ± 4 A, but so far they have been unable to produce accurate values for the flagella of *Bacterium typhosum* or *Bact. paratyphosum A*, the other organisms studied. Their next step was to make suspensions of *B. subtilis*, add specific antisera diluted ten times with distilled water (saline produces undesirable crystals in this technique), stand the mixture for half an hour, and finally dilute it with 100 parts of distilled water before mounting. When the flagella

1. Mudd, S. and Anderson, T. F. *J. Immunol.* 1941, **42**, 25.

were then examined they were irregularly thickened with many granules attached and the maximal thickness was 167 A greater than the original mean diameter. The interpretation of these findings is that there has been a deposition of homologous antibodies on the flagella which takes place unevenly and does not form a complete film. Similar results were obtained when mixtures of specific sera with *Bact. typhosum* and *Bact. paratyphosum A* were examined. When, however, a suspension of *Bact. typhosum* was mixed with a heterologous serum the flagella were only faintly visible and the bacterial cells had sharply defined walls, whereas in typhoid-antityphoid serum mixtures the cell-walls are fuzzy and appear to be surrounded by fine streamers. The loss of definition in cell-wall outline is explained by a deposition of antibody molecules along its margin. Since the size of certain antibody-globulin molecules is already known [2] it would appear that accurate measurements could show definitely whether the thickness of deposited antibody on an antigen surface was related to the size of the antibody molecule. Something of this sort has indeed been shown with tobacco mosaic virus molecules and homologous rabbit antiserum.[3] There are difficulties, because the antibody-globulin molecules of rabbit antiserum are elongated and may arrange themselves radially to the antigen molecules or they may lie flat against an antigen surface, the arrangement depending among other things on the concentration of serum. These observations are still at an early stage, but it seems probable that a systematic study of deposits and of the orientation and distribution of antibody molecules on fine antigenic surfaces may yet explain some of the puzzles of antigen-antibody reactions.

POSTURE AND SLEEP

MEN and animals have been so long at sleeping that we should by now have recorded any universal rules governing the attitudes of sleepers. Yet there is still disagreement about the facts, as our correspondence columns have recently shown. Dr. F. Schütz [4] finds that different sleepers take up characteristic postures, and seldom vary them. He notes the preference of patients with angina for the left side, and has observed further that patients with affections of the liver or gall-bladder include a remarkable proportion of people who habitually sleep on their abdomen. Dr. W. N. Leak [5] mentions that a preference for sleeping on the left side, associated with nocturnal polyuria, may be a sign of mild cardiac inefficiency; but Dr. F. B. Parsons will have none of it,[6] and quotes the work of Johnson, Swan and Weigand [7] as evidence that we have no fixed postures in sleep but toss about far more than we think. Today Dr. Joah Bates weighs in (p.186) with a few brisk assertions from Adler. Johnson and his colleagues in America attached a pen to the part of the bed which yields to the sleeper's movements; the pen wrote on a strip of moving paper and every gross movement of the sleeper produced a spike. Children, university students, 112 healthy people and 70 patients in hospital were investigated by this tell-tale device, which showed that the average sleeper moved between 20 and 45 times a night, the movements ranging between single limb movements and complete changes of posture. Nevertheless 20 or 45 movements a night seem a lot to those of us who fancy we hardly stir, and the value of the experiment perhaps depends on whether the victims knew the record was being made or not. The sleeping mind, if all they say of it is true, would not have been above tinkering with the record by spurring the dreamer to unwonted activity. The American workers also took moving pictures of some of their moving sleepers, but as their method entailed a 100 watt lamp over the bed, a taffeta bandage over the eyes and no blankets the sleepers had some excuse for kicking. Something may perhaps be allowed for the temperament of sleepers, and here domestic animals offer a fair field for experimental observation. Most cats are still sleepers, resting hour after hour with limbs tucked away in flexion, and nothing but the rhythmic bellows' action to show the watcher that the creature lives. Many dogs on the other hand are restless hair-trigger sleepers, always on the brink of waking, haunted by strenuous dreams. If there is anything in the idea of physiological types humans may differ as much. A matron of a London hospital, asked to inquire into sleep and posture, set her night nurses to watch the patients. Those who had taken drugs, who had raised temperatures, or who were immobilised by any surgical appliance were ignored and convalescents only were watched. The nurses found that sleeping patients rarely made gross movements; they actually turned over only two or three times in a night and they half wakened to do that. It thus seems doubtful whether Johnson and his colleagues have said the last word about sleepers, at any rate about those on this side of the Atlantic.

2. Neurath, H. *J. Amer. chem. Soc.* 1939, **61**, 1841.
3. Anderson, T. F. and Stanley, W. M. *J. biol. Chem.* 1941, **139**, 339.
4. *Lancet*, 1941, ii, 774.
5. *Ibid*, 1942, i, 26.
6. *Ibid*, p. 91.
7. Johnson, H. M., Swan, T. H. and Weigand, G. E. *J. Amer. med. Ass.* 1930, **94**, 2058; and see *Lancet*, 1930, ii, 198.

MENINGOCOCCAL OPHTHALMIA

OPHTHALMIA neonatorum with its purulent reaction was at one time regarded as being exclusively due to the gonococcus; but it is now known to be caused by various organisms, the staphylococcus being at least as significant as the gonococcus. Similarly, purulent conjunctivitis in children and adults also has a multiple ætiology; and in this the meningococcus plays a little-recognised part. Metastatic conjunctivitis, serous or purulent, may of course develop in a patient with meningococcal meningitis; but the meningococcus may also be found occasionally in the conjunctival sacs of apparently healthy people, and may sometimes give rise to a primary meningococcal conjunctivitis. The infection may produce a serous or a mucopurulent response, or even a purulent conjunctivitis resembling that caused by the gonococcus. This happens seldom, judging by the scanty—usually single—cases reported; but it is probably commoner than is generally believed, since on superficial examination the gonococcus and the meningococcus—both gram-negative diplococci—are easily confused. Acute purulent conjunctivitis due to either responds well to sulphapyridine, but the differential diagnosis is not altogether an academic exercise. F. Clifton and S. M. Laird have given a useful reminder [1] that purulent ophthalmia is an epidemiological as well as a therapeutic problem. The danger of an epidemic of meningitis originating from a purulent conjunctivitis, particularly under Army conditions, cannot be ignored.

MANY hospitals will remember the generosity of Sir EDWARD MEYERSTEIN, a member of the Stock Exchange, who died last Sunday, for his gifts had a discerning quality. At one time it might be a radiological department, at another an athletic ground for the students, or a swimming-bath for the nurses. To the Middlesex Hospital it meant the completion of a cherished building scheme.

1. *Jour. R. Army Med. Cps*, 1941, **77**, 318.

MEDICAL HONOURS.—The Royal Naval Volunteer Reserve officer's decoration has been awarded to Surgeon Commander J. A. Kerr, M.D. Glasg., who in civilian life is MOH for Grimsby. The King has given permission to Dr. H. C. Sinderson to wear the insignia of the second-class (civil division) of the order of Al Rafidain, conferred on him by the King of Iraq. Dr. Sinderson is dean of the Royal Medical College of Iraq.

THE FUTURE STAFFING OF HOSPITALS*

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THE future development of hospitals staffed exclusively by general practitioners is not dealt with here. In my opinion that type of hospital belongs to a different system which should be integrated with general practice but adequately linked to the specialist hospital system.

THE HOSPITAL PATTERN

Hospitals providing specialist services should be composed of a number of established clinics, and comparable in many respects to a university with its professorial departments. The term clinic is used here to describe a more or less self-contained department staffed by a team working under a director (physician or surgeon in charge) and comprising both wards and out-patient facilities. The established clinics should reflect the pattern of medical science and practice in any given generation, and should fit into the framework of a divisional or regional hospital policy.

The position of director of a clinic should represent a career in specialist medicine which will offer a way of life to men and women of high ability. This should apply not only to the posts in a university hospital centre and in the non-teaching key hospitals, but equally to hospitals in the smaller cities or towns. It is moreover an essential feature of a national policy for the coördination of hospital services that the same opportunities should be offered in the municipal hospitals as in the voluntary hospitals. The staff of a hospital should, contrary to architectural principles, be built from the top down. The directors of clinics should be appointed by selection from an open field, as in a university, and not by automatic promotion from the junior honorary ranks of the same hospital. Only in this way can we prevent the continuous sterilisation of senior appointments by men who turn out to be indolent, unprogressive, self-satisfied or—equally fatal to progress—who display a high standard of mediocrity. It is true of course that even by the method of selection a hospital like a university may occasionally appoint the wrong man, but if his tenure of office is open to review at the end of five years, mistakes can be rectified. It should be possible for men who have created a high reputation in charge of clinics in smaller centres to move on to larger centres, or to be chosen as heads of university clinics. The men of outstanding ability—who in any nation must necessarily form a very small élite—will in this way be competing for the positions which carry the highest academic status. Many able men of lesser distinction will remain on the non-teaching key hospitals or in the smaller centres, and will there find ample scope for an honourable and useful career in specialist medicine.

Clinics directed by consultants and specialists should be much larger on the average than has been the custom in the past. What we need is not more, but fewer heads of departments in each hospital, with an ample supply of associates and assistants of varying rank appointed for limited periods. (In many of the smaller hospital centres the associates would be general practitioners, and this would provide a valuable link between specialist medicine and general practice.) This pattern should apply to the smaller as well as to the larger hospitals. The present overcrowding of hospitals with a larger number of independent small units or firms traditionally regarded as an introduction and later on as an appendage to unrestricted private practice, will tend to disappear naturally as more established specialist appointments become available in all hospital centres which serve a population of agreed size.

CONDITIONS OF APPOINTMENTS

All directors of clinics in both voluntary and municipal hospitals should be part-time salaried officers, but with an obligation to the service of one main hospital. The traditional multiple hospital commitments—two half-days here, two half-days there, one-half day elsewhere—should be prohibited. In the present economic state of society it is desirable that the part-time appointment should remain the basis of the system of staffing. True whole-time appointments in clinical departments are best confined to research professorships, readerships in university clinics and of course to posts for junior officers (chief assistants, research fellows and registrars) who are still in the stage of apprenticeship. In those municipal hospitals in which whole-time specialists have already been appointed that system will no doubt be continued for some time to come. A limited number of such hospitals may fit harmoniously into any future pattern of staffing, but local authorities should be urged to adopt the part-time system for all future specialist appointments if a unified service is to be created throughout the country.

The salary of a director of a clinic should form a substantial part of his income, thereby emphasising that his main preoccupation throughout the whole of his career is his hospital appointment. His salary should not be reduced as he becomes more senior and his knowledge, skill and authority increase; on the contrary, it might well increase as it does in all services, civil and military, and in professional appointments in general. The successful man at the head of a clinic who finds the claims of private practice seriously encroaching on hospital work and teaching must be told that he is at the parting of the ways. If he feels that the public need him and he elects to make private practice his main objective—an honourable enough ambition—he should be required to relinquish his hospital clinic and make way for someone else. Such men will find a useful niche as private consultants; the best of them can be used for limited part-time hospital service and in the practical instruction of students, but with associate rank and not as directors of clinics. On this question there should be no compromise.

The scale of salary should also be commensurate with the status of the appointment, and the lowest salary should be one which will yield a reasonable pension. We may have to contemplate a reduction to something like the pre-war standards (or even less) of the smaller democracies like the Scandinavian countries, Switzerland and Holland, where professorial salaries ranged from £620 to £735.[1] In Sweden the same salary is paid to the directors of non-university clinics in the larger centres. The following figures are based on the old economic standards of remuneration in this country, and are put forward as a basis for discussion:

University professorial clinics .. .. .. (Salary derived in part from the university, in part from the hospital)	£1500 to £2000
Key hospital clinic	£800 to £1000
Small town hospital clinic	£600 to £800.

The time to be allotted to private practice should be clearly defined in the terms of all appointments; in university hospitals a strict limitation is essential. The following principles should be embodied in all hospital appointments.

Overhead expenses of private consulting practice—the glittering façade—should be reduced by providing each head of a clinic with a consulting-room suite within the hospital precincts, and secretarial assistance. Where practicable these privileges should be extended to selected members of the associate staff.

A limited number of pay beds should be available for each clinic; in university hospital clinics these beds should wherever possible be attached to the ward unit and not be in a separate pay block. The professor should be removed from the atmosphere of competitive medicine.

STATUS OF HEADS OF CLINICS

The head of a clinic in every grade of hospital should be given full executive clinical authority over his own department. This authority should be comparable to the control exercised by heads of university departments. Such a status obtains to a large extent in most voluntary hospitals, and especially in the great teaching hospitals, but as a general rule in the municipal hospitals medical superintendents are still vested with overriding executive powers. With the appointment in municipal and county council hospitals of directors of clinics—picked men representing the highest talent of the profession—the

* The substance of a memorandum prepared for the Medical Advisory Council of the Nuffield Provincial Hospitals Trust, of which the writer is a member, and published at their request.

1. The Smaller Democracies. Sir E. D. Simon. Gollancz. 1939.

duties of medical superintendents should be modified. They should confine themselves entirely to matters of hospital administration. Administrative medicine is a career in itself and should demand a highly specialised training; there is widespread feeling that until this change is made, a specialist career on the staff of a municipal hospital will not attract the ambitious type of man.

The heads of clinics in all types of hospitals should be primarily responsible for advising on future developments in domestic clinical policy. In municipal hospitals, this advice should be transmitted through the medical administrative head of the service—the medical officer of health—to the public health committee of the authority. The head of a clinic should have the privilege of nominating but not appointing his associates, assistants and house officers, either directly to the governing body, or through a medical committee composed of heads of clinics.

In university hospitals the directors of professorial clinics should be allotted budgets which they can spend on their departments in their own way. This system might with advantage be ultimately extended to non-professorial clinics and to the clinics of the large non-teaching key hospitals. The main arguments against the purely whole-time system for university chairs in clinical subjects are these:

A professor in a clinical subject is likely to possess unrivalled knowledge in some particular field. This knowledge, as well as operative skill where needed, should be available, with certain reservations, to all classes of patient within the precincts of the hospital. The professor must practise inside the hospital: patients must come to him—if need be from all over the world. For such services the professor should be entitled to charge fees and thus augment his basic income.

For some time to come until a new social pattern emerges, the professor, as a result of the wider contacts arising from private consultations, will enjoy greater prestige in the eyes of the public and greater status in the local and national councils of the medical profession. These contacts are powerful influences in the making of a whole man, and it is such men to whom the profession must look for intellectual leadership.

Election of heads of clinics should follow a university model: advertisement, an open field, a selection committee advised by a panel of professional experts with assistance from outside referees for the most important appointments, and finally, a short list, to be submitted to the electoral body. In the choice of expert advisers, and outside referees, regional or divisional hospital councils should be consulted. All appointments should be made in the first place for a period of five years.

Associates and assistants should not be appointed as part of the permanent establishment of the hospital. Nomination by heads of clinics has been the custom in the hospitals of the United States and Canada for many years, and the system undoubtedly works well. It is essential in university professorial clinics, but in hospitals of lesser rank opposition from existing lay and medical interests may be anticipated before the method is finally accepted.

REGIONALISATION

This pattern of hospital staffing foreshadows for every zone of the population (that is, for every 100,000 inhabitants) the ultimate provision of complete specialist services based on well-equipped hospital clinics in charge of specialists resident in the area. It is assumed that some of the more highly specialised services—neurosurgery, thoracic surgery, radium centres—will be regional or divisional responsibilities. The system is seen at its best in the Scandinavian countries, where every citizen, even if living in remote parts, has access to specialist hospital services maintained at a high standard. If we can lay the foundations of such services here we can check the growth in numbers of travelling consultants (more especially "carpet-bag" surgeons) who descend at intervals on the smaller hospitals—a system which results from the overstaffing of the great hospital centres. It is to the advantage of any community to have a scholarly group of specialists living in its midst, contributing to its civic and cultural life and enhancing the standards of medical practice as a whole.

Three main types of hospital providing specialist services have been discussed—university hospital centres, non-teaching key hospital centres, and hospitals in the smaller towns. It has been suggested that a secure and intellectually satisfying career in specialist medicine can be made available in any one of these types of hospital centre, though in those smaller centres where the prospects of augmenting the basic income by pure consulting work are small, some of the medical clinics might be placed in charge of able men engaged in a restricted form of general practice. How can the three types of hospital centre be welded into a coördinated scheme? The doctrine of regionalisation has aroused suspicion and misgiving in the hospital world, but I use the term to cover only the laudable effort to create from a number of overlapping interests a more economical hospital system. This is a problem in national and regional hospital administration. The link we should envisage between the three types of hospital centre is an intellectual bond, stemming from a common purpose—a high standard of medical science and practice. This is implicit in the system of staffing described above, a system based on the deliberate selection of the best only as leaders, and the provision for them of every facility for the flowering of their talents. We do not therefore need to look too deeply into the future for any fixed pattern of lend-lease amongst the staffs of the three types of hospital centre. Staffs so selected would in time constitute a true national service, attractive because only the highest professional talent can gain admission, a service in which competition will be centred on intellectual not material awards. In such a service the standards of university medicine would be reflected in all specialist centres, both great and small.

In England Now

A Running Commentary by Peripatetic Correspondents

THE visit to the first-aid post I had helped to create in September, 1939, was like a leap into a new era. Looking at the rows of streamline grey ambulances, the stretchers, the piles of blankets, the profusion of tin hats and respirators, I thought of the appalling lack of equipment (bar forms) that had faced us in those early days and marvelled at the happy circumstances that had saved us from attack and annihilation. With our growing strength it has become the fashion to expose our past deficieneies, and after those ambulances (plural) I feel I must unburden myself about our First Ambulance. It had started life many years before as a plain—very plain—van, and by the time the local council had claimed it, senility had infiltrated not only to the chassis but to intimate parts of the engine. All the same it was an official ambulance, and because it added tone to the establishment we and the ambulance depot up the road fought for nightly possession of it. Why we were so warm I cannot now imagine, for its defects were legion. It had no tools, but compensated with an incurable slow puncture and big-end debility. It was almost impossible to get it started, but once in action it compared favourably, for noise, with a squadron of bombers. In every way it was a rogue ambulance, even down to the two wooden stretcher pegs that would suddenly fly out of position, presumably with the malicious intention of hurling the patient to the floor, and stunning the attendant at the same time. The man who delivered it in the first place had had his temper soured in the process, and after remarking bitterly that it was not worth the paint on it he spat contemptuously in the bushes and marched away. The authorities tried to carry things off with a high hand by sticking a notice on the front: "This vehicle must not be driven at more than twenty miles an hour for the next five hundred miles, subsequent to reboring." Some scoffer had added "By order of King Charles the First." Finally it packed up altogether and was removed by a desolate-looking man in dungarees.

Unlike the equipment, the staff of the post was practically the same. A few new faces ornamented the duty room, but most were the pioneers who survived after the first rush to the barricades receded, taking with it the notably unsuitable. These had varied from victims of physical disabilities, such as total deafness and advanced pregnancy, to the innocent who answered "Conceptionist" when asked what section of the personnel she had elected to grace.

In those early days it was the frenzied patriots who caused the greatest trouble; they were far more difficult

to deal with than the frank yearner after £2 a week. Even after two and a half years Mrs. Droop is still mentioned with bated breath. She was one of our earliest volunteers, a tall scraggy woman with a deceptively meek manner masking the ruthlessness of a tank; and she talked incessantly. By incessantly I mean incessantly. Having prominent teeth, and being a mouth-breather, she was not hampered by having to pause for breath, and we listened in involuntary silence while she told us how badly the whole post was organised; how much better she could have done it—were it not for her native bashfulness, and dislike of pushing herself forward—and her determination (even if it involved complete loss of efficiency) not to take any position of authority. She invariably rounded off with the remark that no doubt it was the experience she acquired in running her home for fallen girls that made her specially understanding of our position. Then there was her uncompromising attitude to the pay-roll. When asked if she intended to work on a voluntary or a paid basis, she treated us to a little sermon on the ideals of the Droop family—how they scorned all sordid financial considerations even in the wear and tear of normal life. That money should be mentioned in connexion with national service was unthinkable—and so ad infinitum. But at last, when she had not only frayed but ravelled the nerves of her listeners, she departed in floods of tears, asserting that she would not take orders from every Tom, Dick, and Harry, and breathing sinister threats about reporting us to the War Office and the General Medical Council.

* * *

Among the infants that emerge from this orgy of planning I do hope one will be a Medical Patent Office, to test and register medical and surgical inventions. Come and spend an hour or so in this putative institution. That's the secretary's room, that door leads to the waiting-room, at the back there are the testing laboratories. This is the interviewing room. Sit with me at the interviewer's desk. Touch that bell, please. A dapper little man, carefully carrying a parcel, bustles in. "I'm John Doe, surgeon at the Mudshire Cottage Hospital, you know. This is a urino-speedometer, a device on the principle of the anemometer with revolving cups which register the speed of the wind, but in my apparatus the rate of flow of the urine. Easy to apply and very comfortable. I find that in enlarged prostate cases the dial records somewhere between flat calm and light breeze, while in healthy young adults it often goes up to hurricane." "Very interesting. Perhaps, Mr. Doe, you could give us a demonstration."

"Well, as a matter of fact—just before I came in . . ."

"Quite, quite. Come back in an hour and I'll arrange for you to go straight to the laboratory. Next, please."

A rather sinister-looking individual comes in, Dr. Squirps.

"I want to patent Squirps's sign," he says huskily. "And what is this sign, Dr. Squirps?" "I've noticed when I am examining recruits for hernia and tell them to cough many look down suspiciously and cough down my neck, while a few put up their heads and cough at the ceiling. That's what I call a positive Squirps, and it's very rare." "And what do you think it's a sign of, doctor?" "Confidence in the doctor, undoubtedly." "Very well, patent granted. Good morning."

When the next applicant came in we thought a street vendor must have been let in by mistake—the little man was covered with balloons of all sizes and shapes. "These balloons," he explained, "are lined with a light-sensitive emulsion. This one you see is in the shape of a stomach—medium men's size. When it is deflated, so, and rolled up with a tiny bulb inserted in it, so, it can be easily swallowed with a wire running down a rubber tube attached. You then inflate it till it is comfortably tight—all in the dark, of course—take your exposure, deflate, pull it out, develop . . ." "What, develop the balloon?" "Yes, quite simple, and there you have a cast of the man's stomach in your hand. These round ones are for the bladder, these little worms are male and female urethra balloons, this boa-constrictor does the whole of the colon. Let me show you some of my results. Here now is a carcinoma of the hepatic flexure. . . ." The next applicant was a lady and a would-be humorist. She pretended to hand us her invention and let it sail up and hug the ceiling. "Hydrogen pessary," she beamed proudly; "no tendency to come down!"

"Last week we had a helium one. Much safer—non-inflammable. Patent refused. *Good*-morning."

* * *

To one born and bred in a southern county there can be nothing that so perfectly typifies the English country scene as the chequerboard of meadow and hedgerow that from any vantage point on the Downs may be seen as a rolling crazy patchwork stretching to the scattered clumps of woodland and to the sea. It is typically English, since in no other country is land so universally divided by hedges. Even the stone walls of the north, familiarly beautiful though they are to northern eyes, are to the southerner too cold, too bare, too bleak-looking to replace in his affection the green hedgerows of the south. As for other lands, is it possible that a straggling row of mutilated poplars could ever vie with the hawthorn and the blackthorn? Or can the wire fences of younger and more utilitarian lands ever attain to a sentimental or æsthetic feeling in one separated from them by travel? There are lands in which hedges are made of all sorts of strange plants, from the horrible South African boxthorn to prickly pear—the great distorted, tortured opuntia cactus. But there are no hedges like the hedges of England, for at every change of season the English hedge takes on a new beauty.

There is one type of peculiarly English hedge that has always been especially dear to me. The double hedge and ditch is, I suppose, the most stupidly wasteful form of land division that man could possibly devise, but to me it has always been particularly cherished because in my boyhood it afforded me my most wonderful hours of happiness. It is, I fancy, a dying type, and probably its passing will be no loss to agriculture. In its prime it consisted of a ditch, sometimes water-filled, sometimes dry, bordered on either side by tall hedges of hawthorn and blackthorn whose branches interlaced above. It was a shaded tunnel with puddles, pools or a running brook between as the season dictated. It was here the butcher bird nested, here that the hawfinch built its inconspicuous nest, and, lower down, the hedgesparrow, and in the nettles at its foot the whitethroat. Here was the place to set the kingfisher net and then walk along the ditch towards the net, watching the birds that fled down the tunnel each to find its place in this, the acme of human ingenuity in the painless capture of living wild creatures.

But it was not of sentimental memories of the hedgerows of my boyhood that I intended to write, as a consequence of looking from the train window as I travelled to London from the north. My thoughts had a far more utilitarian attitude towards the hedgerows of present England. As a schoolboy one of my friends was an old type hedger, and a hedger was then a skilled craftsman. There are many young people who think that a hedge is no more than a row of hawthorns or other trees planted in a line and permitted to grow. Apparently from the general neglect of hedges and hedging there are many older people who share this view. But the making of a hedge is—or was—a highly skilled business; for a hedge should be properly "laid" and trimmed by a skilled hedger. The laying of a hedge is the partial cutting, partial bending of actively growing wood into a horizontal position so that from the living branches there are made, not only the equivalent of the uprights or strainers of a wire fence, but also the horizontally stretched wires. A properly planted and properly laid and trimmed hedge is impassable to man or beast. But once a hedge ceases to be properly tended it is useless for either purpose. In the whole of my railway journey I did not see one hedge, save perhaps some of those immediately bordering the railway line, that had been so well tended as to serve its original purpose. There are hedges surfeited with the overgrowth of years, hedges with gaps filled in with barbed wire, hedges with wide gaps that are not filled in by anything, hedges reduced to a series of straggling bushes with here and there an elm or an oak to mark the old line, hedges weed-grown at their foot, sprawling over valuable land, and focal points for further invasion.

No bird-lover can grudge England her hedges. The hedgerows are the nesting sites of our summer migrants

and residents, the winter larders of our winter migrants and of our own native stocks. But our hedges are just as much a part of English scenery, just as secure a sanctuary and as certain a larder for English birds, if they are kept as the hedger of my boyhood kept them, as trimmed and skilfully laid barriers impassable by man or beast.

Can it be, I wondered to myself as I looked from the window of my railway carriage, that this vast overgrowth of hedges in the English countryside is not due to mere neglect by the farmer? Is there some other reason? A newspaper writer has recently claimed that "the hedge is allowed to grow thick and high because it affords convenient nesting places for game birds at its foot and because it forms a convenient wall for them to be driven over in the shooting season." I do not know if this is correct, but from a consideration of the rabbit which has exercised me so much on my railway journeys, I am a little disturbed. Surely it cannot be that the English countryside is being ordered for the purposes of sport rather than of land utilisation for food production? If this is so we are paying a terrible price in loss of good land, in the dissemination of hedgerow weeds, and in the harbouring of sparrows at harvest time by permitting the useless overgrowth of our English hedgerows.

Parliament

ON THE FLOOR OF THE HOUSE

MEDICUS M.P.

WE have passed from the three days of searching debate on the war situation, which dominated the news last week, into the quieter waters of ordinary Parliamentary business. A great occasion like this conflict of the people's representatives set on a grand stage has the disadvantage of overshadowing other major affairs the significance of which is less brightly illuminated by the spot-lights of discussion.

On the day on which Mr. CHURCHILL made his first speech, Sir ARNOLD GRIDLEY asked the Minister of Economic Warfare (Mr. Dalton) about the provision of food for "our starving ally Greece." Other questions have been asked, privately, about the shocking conditions known to exist in Poland and in all parts of Nazi-subjugated Europe. For most of these areas any aid from Britain, or permitted to pass by Britain, is impossible because it would be directly appropriated to their own use by the Nazis and not help the sufferers. But the case of Greece is so bad, especially in Athens, that the Government have authorised the passage of a single shipment of 8000 tons of wheat. This will be distributed under the authority of the International Red Cross, but its shipment to Greece depends on the provision of shipping and the arrangement of a safe conduct by the enemy, and both will cause delay. In addition to this, however, the Turkish Government are willing and able to export to Greece certain foodstuffs, including eggs, which they themselves produce. This export from Turkey is one of the few thin strands of prewar trading arrangements which still exist in Europe.

Mr. DALTON said that in allowing the shipment of wheat we were deliberately running a risk in view of the appalling conditions created by the Germans in Greece. What the effect of the starvation conditions in Europe is on the civil population is difficult to calculate, but what the effect is on the epidemic situation in Europe seems to be a matter which is likely to give the Nazis grave concern from a military point of view. Bacteriological warfare was a form of fighting always considered by the German machine as a possibility, but it is a weapon which the Germans may be forging for use against themselves by creating conditions of deprivation—conditions which it is in their power to abolish by equalising distribution—under which epidemics will arise as destroyers. The blockade of Russia in 1920 led to epidemic conditions in which some millions of lives were lost. Guns may have been better than butter for Germany for a time, but epidemics may be stronger than the orders of the Gestapo in the next twelve months.

Another aspect of the nutrition problem is being brought before Parliament in a motion sponsored by Sir Ernest Graham-Little and a large proportion of the medical members of Parliament, as well as many non-medical. This resolution calls for a select committee to find out what are the considerations which obstruct the exclusive provision of a national wheatmeal loaf of the highest practicable extraction. The point of the demand is that it is feared that the reasons operating against the production of this type of loaf are not based on the science of nutrition but on the interests of commercial firms. The resolution has not yet been given a place in the Parliamentary time-table, but opportunities for discussion will arise, and medical members intend to press for the appointment of the select committee.

FROM THE PRESS GALLERY

Other People's Rations

We all enjoy an occasional grumble about rationing but the debate on Jan. 27 in the Upper House on the food situation in Europe made clear the difference between having to put up with inconvenience and not having enough to eat. After Lord PORTSEA'S moving appeal that a shipload of food should be sent to Jersey and Guernsey Lord PONSONBY rose to ask what the Government knew of the famine situation among our allies in Europe. The Belgian prime minister had said that the population of his country was even now in a state of famine dangerous to public health and the future of youth. Lord Ponsonby wondered whether the commission which went to Poland to distribute food to children was still at work and he specially stressed the needs of Greece which before the war was dependent for half its food on sea-borne trade. Medicine and surgical appliances were said to be already unprocurable there, and Dr. Cawadias, chairman of the Greek Red Cross in London, had reminded us that the Greek merchant navy is now bringing food to Britain instead of to Greece. We could not be indifferent to the danger of pestilence and famine, but above all we should see that the children of today are not allowed to grow up maimed, crippled, dispirited, and children of despair. It was no good saying it is Germany's responsibility and we have nothing to do with it. Abusing Germany and Hitler will not feed these children. He hoped that we might hear that the Government was giving attention to projects for bringing relief, under proper control, to the suffering of these wretched people. The Bishop of CHICHESTER pointed out that the inability of the people in occupied territory to resist when the time came was not to our interest. Nor was it to our interest that they should survive only as exhausted peoples unable to make any contribution to the reconstruction of Europe after the war. Lord CECIL, who replied for Lord Cranborne, said that everyone agreed that the blockade is an odious weapon. But it was one of our strongest, and at the present time almost our only offensive weapon. He did not wish to underestimate the suffering of people in Europe today but it was not everywhere equal. In rural districts, except in Greece, parts of Yugoslavia and northern Norway, there is at present no considerable shortage of food, but in the towns the position was not nearly so good. Still out of the population of 130,000,000 in occupied Europe about 60,000,000 are living not much below pre-war level. In Holland, Czechoslovakia and Norway there was no serious undernourishment but in occupied France the position was probably rather worse and in Belgium considerably worse. There a large section of the urban population are at the moment chronically underfed. To sum up simply—compared with the normal daily requirement of 3000 calories, Czechoslovakia and France had 2300, Belgium 1900, the Netherlands 2250, Denmark 3100 (over normal), and Norway 2500. But in certain areas within those countries there was considerable stress and hardship. Suffering was worst in Poland and Greece. It was difficult to get accurate information about Poland, but it is almost certain that in Warsaw and other big towns there are people going very short. He did not know if the commission for relief in Poland was still in existence. Greece was in a different category. The Germans do not require Greek labour and therefore do not need to feed the Greeks, and there is no doubt that the people of Greece are suffering appalling privations. Where other countries are suffering want they are the victims of famine. Lord Cecil had heard stories of people falling dead in the streets of Athens from sheer starvation, and he was glad to announce the Government's decision to authorise a shipment of wheat

to Greece. But in spite of this exception the Governments of Britain and the United States continued to maintain that it is incumbent upon the enemy to feed the countries he has occupied.

QUESTION TIME

Red Cross Brassards

Brassards with the Geneva Cross are issued to all officers of the Army Medical Services in accordance with article 21 of the International Convention for the amelioration of the conditions of the wounded and sick in armies in the field. These brassards are required to be worn when serving in a theatre of active operations, and in connexion with operational exercises when so ordered by a general officer commanding. (Captain H. D. R. MARGESSON in reply to Mr. T. E. GROVES.)

Priority in Emergency

The medical officer of health would not call on a doctor to assist in the services under his control if the doctor were actually engaged at the time on urgent private work. (Mr. E. BROWN in reply to Mr. GROVES.)

Shelter Medical Officers

Dr. H. B. MORGAN asked the Minister of Health whether he was aware that at least two of the shelter medical officers employed and under contract for medical service at Liverpool Street station underground shelter lived away from the district, one in Kilburn and one in a southern suburb; on what grounds were such medical appointments made, and why badly hit medical practitioners in the surrounding and nearby districts were, and were not now, employed for this work; whether those appointed attend regularly or only when the alarm was sounded; and what remuneration was attached to these appointments.—Mr. BROWN replied: These appointments were made by the City corporation as the responsible shelter authority. The corporation had represented that there were no medical practitioners normally resident in the City who were willing and able to take on the work. The corporation were therefore authorised to appoint four full-time shelter medical officers at a salary of £500 a year each. The officers come on duty at the beginning of the black-out, visit each of the large public shelters, and remain on duty at the City control centre all night.

Rural Whole-timers

The numbers of rural district councils in England and Wales who, either as individual councils or jointly with other councils, have whole-time medical officers of health and sanitary inspectors respectively are 259 and 464. (Mr. BROWN replying to Sir PERCY HURD.)

Fitness for Overseas Service

Only personnel of medical categories A and B are considered fit for overseas service. Before mobilisation for overseas officers, nurses and other ranks who appear to be below the standard of fitness required for their unit are transferrd to a unit where a lower standard of fitness is accepted or brought before a medical board. Between mobilisation and proceeding overseas weekly medical inspections are carried out to ensure freedom from infectious or contagious diseases. (Captain MARGESSON in reply to Mr. W. DOBBIE.)

Milk for TB Contacts

Mr. J. PARKER asked the parliamentary secretary to the Ministry of Food whether he was aware that contacts of tuberculosis provided a considerable source of new cases, and since the maintenance of adequate nutrition was as important for the prevention of this disease as for its treatment, would he extend the schedule of conditions qualifying for priority claims on liquid milk, which now applied to active tuberculosis only, to include adult and child home-contacts of active tuberculosis, other than those covered by school or other milk schemes, where the tuberculosis officer considered that this would be beneficial.—Major G. LLOYD GEORGE: The Milk Priority Scheme is strictly in accordance with the recommendations of the (special diets) advisory committee of the Medical Research Council. I regret that it is not possible to extend priority to all tuberculosis home-contacts who are not at present eligible under the scheme.

Silicosis Reports

Mr. JAMES GRIFFITHS asked the Lord President of the Council if the investigation into the incidence of silicosis among coalminers in South Wales had now been completed; and if he could make a statement indicating the findings of the committee and their recommendations.—Sir JOHN ANDERSON replied: The investigation has been completed. A full report on the medical studies is in the press, and will be available in a few weeks; it will be prefaced by a statement giving the findings and recommendations of the committee. A second report which deals with the environmental studies is almost ready for printing.

Additions to Canadian Flour

The only substance added to Canadian flour before export, under instructions from the Ministry of Food, is aneurine (synthetic vitamin B_1), which is added to bring the B_1 content to a figure similar to that of fortified flour produced in this country. It is understood the position in regard to chemical improvers and bleachers in Canadian and other imported flour is similar to that of flour milled in the United Kingdom. Imported flour is not chemically bleached after arrival in this country. (Major LLOYD GEORGE in reply to Sir E. GRAHAM-LITTLE.)

Nurses who should have Registered

Legislation would be required to enable nurses who failed to apply for registration as existing nurses within the period of two years ended May, 1925, which was allowed by the rules of the General Nursing Council under the provisions of the Nurses Registration Act, 1919, to be admitted to the Nurses Register without satisfying the conditions applicable in the case of other applicants for admission to the register. (Mr. BROWN in reply to Captain W. F. STRICKLAND.)

Veterinary Research in Scotland

Mr. G. MATHERS asked the Minister of Agriculture how Scottish opinion and experience were obtained in respect of veterinary diseases; and what connexion was maintained with the Scottish Department of Agriculture with regard to research.—Mr. R. S. HUDSON replied: The organisation of all matters connected with animal disease is uniform throughout Great Britain. Scottish opinion and experience is available through channels corresponding to those in England and Wales. In addition, one of the Ministry's superintending veterinary inspectors is stationed in Edinburgh for liaison duties. Coördination of research is secured through the Agricultural Research Council which considers and advises on programmes of research in both countries. In addition direct contact is maintained between the officers of the two departments of agriculture concerned with research.

OPENING OF THE CHURCHILL HOSPITAL

ON Tuesday of last week the Duchess of Kent opened the new Churchill Hospital at Headington which is now to be the home of "The American Hospital in Britain." The venture was made possible through the British War Relief Committee (of America) whose representative, Mr. Bertram de N. Cruger, attended the opening ceremony. The Minister of Health was also present. It was in August, 1940, that a group of American surgeons, under Prof. Philip D. Wilson, orthopædic surgeon at the New York Hospital for the Ruptured and Crippled, reached this country and they have since been working at Park Prewett. At the suggestion of Professor Girdlestone the unit was invited by the Wingfield-Morris Orthopædic Hospital to occupy the adjacent EMS hospital building, and has moved from Basingstoke to Oxford to become a sort of alter ego of the Wingfield-Morris, administered by its committee for the EMS with Professor Wilson in independent clinical charge. The twin flagstaffs will accordingly fly Stars and Stripes and Union Jack. About two-thirds of the hospital will be orthopædic, Churchill and Wingfield together forming the Oxford Orthopædic Centre, but Professor Wilson has brought over, in addition to orthopædic surgeons, Dr. John M. Converse for plastic surgery, Dr. Rogers of McGill for general surgery, and Dr. Kirkland, who will be in charge of medicine and clinical pathology. The staff at present includes 12 doctors and about 50 American and Canadian nurses, with Mr. John Crane as superintendent. The wards which provide 600 beds are built around a courtyard, to the design of Mr. R. F. Dodd, each ward with its own air-raid shelter. At Basingstoke the unit already proved its worth in training American surgeons in methods of war surgery and the promoters hope that the Churchill Hospital may eventually be taken over by the

U.S. Army as its first base hospital. The weather was severe on the opening day but when Sir Farquhar Buzzard proposed the principal toast at the lunch and Professor Wilson replied there was ample reason to foresee a cultural as well as a scientific fellowship between the two countries represented.

Obituary

PERCY KIDD

M.D. OXFD, F.R.C.P.

BY the death of Percy Kidd our profession has lost not only an eminent clinician but also a great gentleman. "P. K." (as he was always called) was a physician of the Victorian age—a careful clinical observer specially skilled in the use of the stethoscope and gifted with sound common sense and judgment. His bedside teaching was valued by his students for its insistence upon the importance of physical signs although a certain natural diffidence made him less successful in the lecture room. He wrote little and chiefly on diseases of the chest, but he never wrote unless he had something to say. His handsome well-cut features—and his equally well-cut clothes—his active and upright figure, and his charming and invariable courtesy were notable in any gathering, but an essential modesty made him backward in expressing his opinion in committee, although when he did so he was sure to be on the side of the angels. Himself a man of the highest principles he had no patience with anything mean or mercenary, or which offended his rigid sense of professional honour, and when confronted with such he could show real anger.

Elliott & Fry

"P. K." had many interests outside medicine. Up to an advanced age he rarely missed a fortnight's spring salmon fishing in Scotland and he was a keen golfer and a musician of considerable technical ability. The last years of his long life were clouded by increasing failure of mental and physical powers, and by the death of his devoted wife. So there is really nothing for tears in his passing; the last summons must have come to him as a release.

R. H.

Percy Marmaduke Kidd was born in 1851, second son of Dr. Joseph Kidd, who (himself the seventeenth of 18 children) dedicated five of his 15 children—Percy, Walter, Leonard, Frank and Mary—to the profession of medicine. He was educated at Uppingham, where he was athletic champion, and Balliol College, Oxford, where he was Radcliffe travelling fellow, qualifying from St. Bartholomew's Hospital in 1878. There he was house-physician to Samuel Gee, medical tutor and casualty physician, until after getting on the staff of the Brompton and City of London Hospitals he was in 1890 appointed assistant physician and pathologist to the London Hospital, later becoming lecturer on the principles and practice of medicine. The Royal College of Physicians elected him fellow in 1885, councillor in 1903, censor in 1911, and Harveian orator in 1918. The oration was remarkable in its insistence on the need for better understanding of the pathology of tuberculous infection. Recalling Thomas Willis and Richard Morton he ended with the cry of the disillusioned prophet, "I am not better than my fathers." Some idea of his own intense interest in the problems of seed and soil may be gained from the following selection from his published writings:

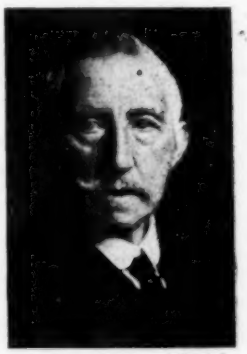
(1875) Spontaneous Movements of Nucleoli. *Quart. J. micr. Sci.* (1877) Early Development of the Hen's Egg. *Ibid.* (1878) A Contribution to the Pathology of Hæmophilia. *Med.-chir. Trans.* (1883) Diphtheritic Paralysis. *Ibid.* (1884) Unusual Case of Pulmonary Aneurysm. *Trans. path. Soc. Lond.* (1885) Fatal Hæmoptysis from Hydatid of the Lung. *Ibid.* (1886) Basic Tuberculous Phthisis. *Lancet.* (1888) Phthisis Pulmonalis. *Allbutt's Syst. of Med.* Sputum. *Quain's Dict. of Med.* (1895) Diseases of the Respiratory System. *Bain's Dict. of Med.* (1910) Clinical History of Pneumonia. *Polyclinic Lecture.* (1912) Some Moot Points in the Pathological and Clinical History of Pneumonia. *Lumleian Lect. R.C.P.* (1918) Doctrine of Consumption. *Harveian Oration.*

Dr. Kidd married in 1881 Gertrude, daughter of Major-General T. B. Harrison, and they had three sons. She predeceased him in 1940.

ARCHIBALD KERR CHALMERS

M.D., LL.D. GLASG., F.R.F.P.S.G., T.D.

Dr. A. K. Chalmers, who died on Jan. 24 in his eighty-sixth year, was for nearly 33 years medical officer of health for the City of Glasgow, retiring in 1925. Born at Greenock in 1856 he was educated at Glasgow University, where he qualified M.B. with high commendation in 1879. For the next few years he was resident at the fever hospitals for the city and the joint authorities (at Maryhill), taking the D.P.H. Camb. in 1889. Two years later he entered upon his public health career when he was appointed colleague to James Burn Russell, and in 1898 succeeded him as M.O.H. Chalmers's tenure coincided with the transition between the more purely environmental services and the personal services on which modern public health is founded. At the same time, he never lost sight of the fact that improved environment lay at the root of a sound health organisation, and housing reform in particular was one of the paramount aims of his administration; indeed, his studies of housing in relation to health were widely quoted and used as illustrations to point the way to modern housing and town-planning legislation. His pioneer work on defects in school-children also paved the way for legislation. His attitude to these and other public health problems was that of the investigator, and his writings were notable for combining the results of his inquiries with practical administrative ideals, although advance was slow and not at all proportionate to his enthusiastic advocacy. But he saw in his lifetime the conversion of rickets from a disease causing obvious bony deformity to a deficiency disease which could be avoided by healthy nutrition.



Elliott & Fry

Like many others who served him in the public-health department, writes A.S.M.M., I consider myself fortunate in the association with a man who set the highest standards for himself and his staff. His reports were accurate, clear and convincing. His long experience had furnished him with a wealth of knowledge, always freely placed at the disposal of his colleagues, so that it was a delight to discuss with him the day-to-day work of the department and to argue plans for the future. I have rarely come into contact with a mind so richly endowed, so fertile in ideas, and it would take too long to recount all his administrative achievements. He had to deal with a number of menaces to public health, such as bubonic plague, smallpox, typhus and other epidemics. He laid the foundations of the maternity and child welfare service, the tuberculosis and V.D. schemes; he clearly perceived the wide range of functions that infectious hospitals could serve, particularly in the treatment of pneumonia and in the simpler infections of childhood. Part of his retirement he devoted to a survey of the progress of sanitary, preventive and housing measures in the city from 1818 to 1925, published in a volume entitled "The Health of Glasgow." In his early years he was an enthusiastic volunteer, holding the rank of surgeon-major to the 1st Lanark field artillery branch. When the medical department was reorganised under the Territorial Forces, he became chief sanitary officer of the Lowland Division, with the rank of lieut.-colonel, serving as such in the last war. In addition to other distinctions, he was president in 1913 of the Society of Medical Officers of Health.

Dr. Chalmers married Margaret Jessie, daughter of Henry Stewart of Glasgow. They had three sons, one of whom was killed in the last war.

Letters to the Editor

HUSBANDING OF LIVER EXTRACTS

SIR,—In your leader of Jan. 24 (p. 110) it is stated that the usual method of treating pernicious anæmia is to inject small doses of liver extract every one or two weeks. By "small dose" is presumably implied the usual content of one ampoule, that is to say 2 c.cm. Further a statement is quoted to the effect that it takes "more liver extract to maintain a patient in remission by the depot method than by the weekly treatment method."

It would be unfortunate if either of these propositions gained acceptance. The records of this pathological department cover the treatment of some 200 cases of pernicious anæmia over the past fifteen years. These make it quite clear that the vast majority are maintained in a satisfactory state of remission on a dose of 4–6 c.cm. of a fully potent liver extract once every two to three months. Except in the early stages of treatment weekly doses are never given. These results are probably due to the fact that no liver extract is used in routine treatment until the efficiency not only of the particular preparation but also of the actual batch has been tested in the department. This is made possible by arrangement with the manufacturers. The criteria of potency adopted are the reticulocyte and red-cell responses to a standard dosage; data and formulæ covering these are in course of publication by Dr. B. L. Della Vida of my laboratory staff.

In routine treatment it is found that for the first year after the return of the blood picture to normal it is desirable to examine the blood every two or three months. Thereafter the requirement of liver extract becomes stabilised and half-yearly or annual examinations suffice.

S. CLAYKE.

Pathological Laboratories,
Royal Hospital, Wolverhampton.

WAR-TIME NURSERIES

SIR,—The report of the Women's Parliament (*Lancet*, Jan. 24, p. 120) was interesting, but like other conferences on war-time nurseries this one lacked a sense of reality. Let us look at the facts which determine what we *can* do in the way of war-time nurseries; and do not let us forget that the welfare of the children can be disregarded only at a price we should not be prepared to pay—a serious deterioration in physical and mental well-being.

In peace-time the soundest reason for the establishment of day nurseries and nursery schools is that children should benefit from the orderly routine, rest, nourishing food, and opportunities for healthy development available in well-run and adequately staffed centres. In war-time two other reasons operate: women (especially those receiving service allowances) are forced by lack of means to take up work; and more women are needed in industry. In our opinion the first is an unjustice, which should be remedied by adequate allowances for children. The second is powerful, but would more nurseries in actual fact release an enormous number of efficient women for industry?

The Ministry of Health circulars on war-time nurseries stipulate that non-domestic staffing should be in the proportion of 1 woman to every 5 children, and in addition at least 2 domestic staff are required for a nursery of 40 children. A nursery of 40 children will release therefore 25 women for industry, if one is prepared to admit 2 children from one family in 25% of cases admitted. But these women still have the cares of the family upon their shoulders, no matter what hours the children remain in the nursery. Their efficiency can never be 100%, and their absentee rate tends to be high. To ensure that all the mothers with children under 5 in greater London alone should go into industry, nearly 30,000 full-time workers would be required to deal with their children. In addition, the manual labour employed in adapting, equipping and maintaining premises must not be overlooked in assessing the gains to labour that these centres may provide. Is it not possible that the women employed in war-time nurseries would be more economically used in industry, the mothers being left to look after their own children? There is also a serious danger (due to a feeling that any nursery is better than none) that day nurseries with inadequately trained staff may be established. We are both in favour of day nurseries and nursery schools, but the value of these depends upon properly trained staff, of which there is already a serious shortage. We note with surprise that the Ministry of Health will accept a matron who has had no experience in dealing with healthy children and no training in understanding their mental development; and with dismay that a trained nursery school teacher may serve several nurseries, with a warden to take her place in individual nurseries and that the warden's training may consist of only two weeks' instruction. If nurseries staffed on these lines are set up in any number, the result will be an increase in attendance at child-guidance clinics and in the sickness-rate of children and staff. Those of us who have much to do with school-children are already perturbed by the effect upon them of mothers being at work. Uncleanliness, lousiness, indiscipline, and petty misdemeanours are already on the increase; and all the communal meals, breakfasts, dinners and teas cannot make up for lack of home care. *Somebody* must look after children.

Surely there are other ways of getting the labour so urgently required. If unnecessary and delaying red tape procedures were eliminated, could every Government department and local authority honestly claim that all their staffs would be fully employed? Cannot large stores, where girls stand about for three-quarters of the week with too little to do, organise a rota for part-time work, and have full staff only on the one or two busy days of the week? Could not the people in residential hotels do more work for themselves? Women in full-time Civil Defence Services would be glad to be employed in constructive work during some of their unoccupied time while things are quiet. It may be that the Ministry of Health are of the same opinion as ourselves, since most local authorities who have been trying since May, 1941, to obtain approval from the Ministry for schemes for day nurseries are impressed by the variety of delaying tactics which are adopted by the central authority; and it is a little ironical to read a joint letter from the Minister of Labour, the Minister of Health and the President of the Board of Education to the lord mayors and mayors of large industrial areas asking for their personal interest in providing more day nurseries for war workers' children.

Mass production of war-time nurseries may result in serious damage to the health and proper development of young children, because a day nursery, unless well staffed, is a menace. Moreover it is a clumsy and uneconomic makeshift for proper planning and re-organisation in the industrial world. Before we sacrifice the ground which has been gained in health and well-being over the last 30 years by improved maternal care, let us consider possible alternative methods of recruiting women for war-time industry.

MARY L. GILCHRIST,
MATHILDA F. MENZIES.

THE DYSPEPTIC SOLDIER

SIR,—The article of Colonel Brockbank (Jan. 10) and the commentary of Mr. Maingot (Jan. 24) bring out the Army's opinion of the treatment of peptic ulcer—something we know and would be willing to leave parked in the subconscious. But it is out and this is Mr. Maingot saying it:

> "Now the Army is discharging a large number of patients suffering from proved—and sometimes unproved—peptic ulcer. No special centres have been set up it seems for dealing specially with these cases, nor have any means been devised for tackling a problem of vital national importance."

A hasty survey shows me that in days of peace we read—or there were written for our reading—some 125 articles a year on medical and surgical treatment of peptic ulcer. In most there was a statistical summary of results, remarkably alike. I quote: "the cures constitute approximately 75% of the total number of cases." In the hard trial of war the Army, with knowledge born of experience, will have none of the 75% who should turn back and glorify the medical profession. Army orders weed them out, long, short and tall. Colonel

Brockbank quotes the Army authorities' instructions to presidents of medical boards: "Cases exhibiting active gastroduodenal symptoms with proved organic lesions . . . should be recommended to be discharged as permanently unfit for military service." Why should this be? I see two explanations: (1) the fault is written in the optimism of medical authors; (2) the fault is with the Army. If (1) is true some censorship of our medical literature is overdue. If (2) is true and (1) false what a field is open, what an opportunity being lost—opportunity for Army gastro-enterological clinics and hospitals, centres of health where 100 men cast out unfit from the ranks of fit men may be treated medically and surgically, sorted and re-graded into 75 fit men and 25 in the descending scale of fitness. To a proportion of these 25 we would reluctantly have to pronounce the dread sentence: "We recommend that you be discharged as permanently unfit for military service."

Harley Street, W.1. H. C. H. BULL.

SOMNAMBULISM

SIR,—Being interested in the incidence of sleep-walking, and having no figures available, we inquired for ourselves. One hundred persons in South-East London were interviewed. They were asked if they themselves had ever walked in their sleep; 3 had done so. If married, they were asked whether their marital partner and children had ever done so; if single, whether siblings or parents had: 406 more people were so covered and among these there were 21 somnambules (5%). It was ascertained that 20 additional close relations (e.g. uncles, siblings of married persons) had walked in sleep. In 68 families there was no known somnambule, 24 families had one each, 6 families had two each, 1 family had three and 1 family had five. Clearly there is much material for the study of the significance of somnambulism.

ELI DAVIS,
MONIQUE HAYES,
BRIAN H. KIRMAN.

Greenwich, S.E.10.

REGISTRATION OF ASSISTANT NURSES

SIR,—The two letters of Miss Edwards, secretary of the Nursing Recruitment Centre (*Lancet*, Jan. 3 and 31, pp. 27 and 154) show the hazardous future of any nursing aspirant. It appears that in some of the 700 approved training schools "excellent conditions" are offered to the nurses. Were it prudent and possible in these times to carry out an investigation into the conditions in training schools the insignificance of the number to which the word "excellent" applies might be a surprise to many, perhaps to Miss Edwards herself. There are in addition many institutions throughout the country staffed with 80 or 90% of untrained and untrainable nurses. This is not to the credit of the General Nursing Council nor to that portion of the medical profession engaged in hospital work. When, as Dr. Esther Carling (*Lancet*, Jan. 24, p. 125) points out, these institutions may be financed by the Treasury and local government funds the discredit is even greater. There is much that is wrong with nursing as a career today and in few training schools are the conditions likely to attract recruits. With national registration there is bound to be an increase in nursing aspirants. How many of these will take up nursing because they really wish to become nurses? How many will enrol for nursing in simple preference to a less congenial and less romantic war job? After the war there will be an increase in the number of young girls willing to train as nurses. Now is the time to prepare and repair a very out-of-date structure.

In no other walk of life where girls are employed is the discipline so absurdly strict and the privileges so few. In the *Nursing Mirror* of Jan. 17 are two letters of interest. One, from a nurse, gives a description of hospital pettiness typical of most hospitals; and the other, from a matron, outlines a policy which obviously does not exist in the hospital to which the nurse in her letter makes reference. What can be done to improve this very worthy profession? Miss Edwards supports one essential improvement. Let there be a register of assistant nurses in which are those uncertificated "nurses" whose authentic nursing experience conforms to an adopted standard. Non-training schools and nursing-homes would then employ state registered nurses with a percentage of registered assistant nurses. In a training school the staff must consist of fully qualified matron, assistant matron, sister tutor, ward sisters, staff nurses, and probationer nurses undergoing training. It is important that the senior staff should possess the necessary certificates covering the work of the hospital: thus a matron, appointed to an isolation hospital which also admitted tuberculosis, should be in possession of fever and tuberculosis certificates. The pay of probationer nurses should be no more than is required to meet reasonable expenses during her training. There should, however, be a substantial increase of salary on certification. In other words better pay for the state-registered nurse. These rates of pay should be standardised throughout the country and an end put to the competitive bidding for hospital staff exhibited in current nursing journals. The improvement of hospital conditions is a task for the nurses themselves and the General Nursing Council to tackle without further delay.

Manchester. R. SYDNEY DAVIDSON.

SCIATIC PAIN

SIR,—I beg leave to correct a statement attributed to me in your columns in the report (p. 141) of a recent discussion at the Royal Society of Medicine on sciatic pain. I am alleged to have said that I would not advise operation for a prolapsed intervertebral disc in any case, and that the results of surgical intervention had been deplorably unsuccessful. I should not like it to be thought that these were my opinions. I am convinced that operation for this condition has a useful, at times an essential, place in treatment; that we owe a considerable debt to those who first introduced it; and that we shall be still more indebted to the surgeons when we and they together are better able to judge in relation to the whole circumstances of a given case whether operation is preferable to more conservative methods of treatment. Such improvement in our judgment can be achieved only, as Mr. Pennybacker suggests, by a careful follow-up of patients treated by the two methods.

What I did say in the course of the discussion which you report was that my experience with Service patients up to date had been that operation had been deplorably unsuccessful in getting them back to duty. I had in mind a number of such cases in which I myself had advised operation and had subsequent reason to deplore that advice. It may be that others have seen better results in Service cases, and if this be so I hope that we shall hear from them. On the other hand it may be that there is a difference between the results of operation in civilian and service patients because the latter have to return within a limited period to duties which are apt to cause recurrence of symptoms. So far as my own experience goes I had hoped from the favourable accounts given by Dr. J. G. Love and others that the operation might provide a short cut for the return to full duty of valuable Service personnel, but the results which I have seen have on the whole been so disappointing that I now advise it only in exceptional cases.

Oxford. C. P. SYMONDS.

POSTURE DURING SLEEP

SIR,—I have just come across the following passage in Adler's "Problems of Neurosis" (p. 152) which represents a point of view as yet unmentioned in this discussion.

"When we see a person sleeping upon the back, stretched out like a soldier at attention, it is a sign that he wishes to appear as great as possible. One who lies curled up like a hedgehog with the sheet drawn over his head is not likely to be a striving or courageous character but is probably cowardly. . . . A person who sleeps on his stomach betrays stubbornness and negativity."

Surrey County Sanatorium, Milford. JOAH BATES.

"Neurosis simulating *Organic* Disorder" should have been the title of Dr. Dillon's letter last week.

The fact that goods made of raw materials in short supply owing to war conditions are advertised in this paper should not be taken as an indication that they are necessarily available for export.

Medical News

University of Oxford

In a congregation held on Jan 22 the following degrees were conferred :—

B.M.—H. J. Elverson, R. F. Ormrod, J. P. V. Rigby, Helen M. D. Fox, Joan P. Moignard, *R. E. M. Coke Harvey.

* In absence.

University of Cambridge

On Jan. 24 the following degrees were conferred :—

M.Chir.—C. G. Rob (by proxy).

M.B., B.Chir.—G. A. Barclay, D. G. Vulliamy, W. J. M. Beveridge, J. N. Milnes, J. A. Smith, David Caddy, W. H. Chase, J. J. Landon, C. W. F. McKean, F. E. T. Scott, G. O. Storey, E. D. Cullen, J. P. Donnell, S. E. Large, J. D. Atwell, J. H. Tasker, Harry Butler, E. J. S. Evans, Hugh McColl, T. N. Fison and W. H. Scott-Easton (all by proxy); W. H. Tattersall and P. G. Jeffries (in person).

M.B.—Richard Cairns (by proxy).

Royal College of Physicians of London

At a comitia of the college held on Jan. 29, with Sir Charles Wilson, the president, in the chair, Dr. S. A. Henry was appointed to deliver the Milroy lecture in 1943 on the health of the factory worker in war-time. The president gave an account of his visit to America and of his conferences with the medical authorities in Washington, Ottawa and New York.

The following candidates, having satisfied the censors' board, were admitted to the membership :—

John Apley, M.D. Lond., flight-lieutenant R.A.F.V.R.; R. A. J. Asher, M.B. Lond.; James Carson, M.B. St. And.; R. V. Dent, M.B. Camb.; G. R. Fearnley, M.B. Lond.; Israel Gordon, M.D. Edin.; J. McC. Kilgour, M.D. Manitoba, captain R.C.A.M.C.; J. W. Magladery, M.D. Toronto; J. M. Malins, M.B. Birm.; W. H. H. Merivale, M.B. Lond.; C. M. Miller, M.B. Lond., flying-officer R.A.F.V.R.; Margaret E. Morgans, L.R.C.P.; Muriel L. Newhouse, M.B. Lond.; R. B. Niven, B.M. Oxfd; R. D. Scott, M.B. Camb.; Agnes H. Wilkinson, M.B. Birm.

Licences to practise were granted to 279 candidates (242 men and 37 women) who have passed the final examination of the conjoint board and complied with the by-laws of the college. The following are the names of the successful candidates :—

Joyce M. Ackland, R. H. Ahrendfeldt, J. A. Ainslie, R. C. P. Aldridge, Margaret B. Allchin, Joan M. L. Apted, T. C. R. Archer, Winifred N. Backhouse, C. H. J. Baker, Margaret E. R. Balfour, G. M. Barrett, A. C. Barthels, D. G. B. Bennett, Harry Bentley, B. A. S. Bhalla, John Birch, J. W. Bishop, Victor Blackman, S. H. Bockner, R. B. Body, V. M. Borrelli, D. E. Bottrill, Sheila A. Bowden, Irene J. S. Bramley, J. D. Broadbent, D. H. Brown, J. K. Brown, Dorothy B. D. Callander, Gordon Canti, B. S. Cardell, Joyce L. Chamberlain, C. J. Champ, Lilian M. Chant, D. J. Charley, A. L. M. Christie, Ralph Citron, A. S. Clark, T. E. Cleghorn, N. K. Contractor, P. B. Counsell, H. G. Coupland, C. O. Crawford, D. H. Crook, W. G. Cross, Mary H. Cutting, I. S. Dalton, W. G. Dangerfield, N. A. Daniel, P. M. Daniel, C. St. J. Davies, C. M. Davies, Joyce A. Davies, M. E. Davies, P. T. Davies, Ethel L. Deas, J. L. D'Silva, Elizabeth S. A. de Wit, D. G. Dixon, A. P. Douglas-Jones, H. D. Doyle, J. H. Ebbetts, D. F. Edmiston, C. O. Edwards, T. A. B. Edwards, F. A. O. El Gabbani, Otto Englander, D. T. R. Evans, D. R. Evans, Henry Ezriel, Peter Farr, P. J. Fawkner-Corbett, D. P. Finnegan, A. O. Foster, H. M. Forde, Ronald Fothergill, E. H. M. Foxen, Ferdinand Frank, G. C. Franklin, J. E. Gabb, B. F. Gans, J. G. Gant, Harold Gavurin, A. W. Gibbons, George Gimmack, C. J. Glass, Paul Goldscheider, A. H. Golledge, W. W. Gooddy, S. E. Gordon, D. W. Gould, Mary B. Graham, R. J. D. Gray, Edward Greenwood, E. P. Griffiths, J. E. H. Griffiths, Isidor Grossmann, Maria E. Grossmann, H. O. W. Grosvenor, J. A. Guilfoyle, Ladislav Haas, Edwin Haigh, J. P. Haile, M. H. Hall, W. S. Hall, W. A. Hamer, M. S. Handley, E. A. Hargreaves, Margaret Hargreaves, J. J. Hayward, V. L. Helm, F. G. Herman, H. D. G. Hetherington, Inez Hewitt, William Hewitt, I. T. T. Higgins, F. E. Hobbs, Edmund Holland, T. D. S. Holliday, C. D. Hopkins, Leo Hornung, Charles Howick-Smith, P. E. Hughesdon, Aladar Jakobovits, J. G. H. James, J. B. Jayne, J. T. M. C. Jenkins, J. D. Johnson, I. L. Jones, Benno Juhn, A. R. Kagan, Albert Kagwa, K. G. Kapoor, S. L. Kaye, Anna R. Kemp, T. L. Kennedy, D. H. King, Irene M. V. King, Helen G. Kirk, Bertha Klempman, John Knowelden, J. A. Knowles, Benjamin Kohn, Bernard Kustow, M. G. Langdon, D. A. Langley, J. R. Lauder, M. N. Laybourne, Lorna E. Lethbridge, H. B. M. Lewis, Egon Lewit, F. M. Liebmann, N. P. W. Littler, G. H. T. Lloyd, Julius Lowy, B. S. Lush, Vivien U. Lutwyche, L. A. McAfee, W. H. McAleenan, M. K. McCarthy, E. A. McDowell, H. P. E. MacFarlane, Monica K. Mack, R. D. MacLean, A. C. McLeish, D. L. T. Macsherry, P. B. Maling, J. V. Mandel, H. N. Mansfield, Pauline C. Marshall, V. H. Martindale, P. B. Maxted, Israel Mazin, Basil Messer, A. H. Michael-Phillips, L. F. Miller, J. N. Milnes, A. T. Moorhouse, J. A. U. Morgan, D. S. Morris, V. O. L. Morris, T. G. S. Murray, W. H. Myers, F. W. Nash, R. T. Nicholas, R. C. E. Norman, E. R. Nurse, Reginald Ogley, Oscar Olbrich, D. S. Orr, B. D. Owens, A. C. Parkinson, H. L. Patney, M. B. Paul, J. F. Pelmore, D. V. Phillips, G. H. N. Phillips, W. L. F. Pilsworth, John Pinching, N. M. F. P. Pitt, W. H. P. Poad, P. J. Poels, C. E. Powell, G. F. Purves, Kathleen M. Rains, R. V. Read, Walter Recht, Alun Rees, D. D. L. Rees, Edgar Rhoden, W. S. Rhodes, J. P. V. Rigby, B. W. T. Ritchie, J. S. Rix, R. R. H. Robertson, L. C. Robson, H. M. Rose, Albert Roth, R. T. Routledge, S. R. Rubin, J. E. Russell, R. Schwinger, J. P. Scrivener, Benno Silbiger, Satyendra Singh, Mark Slade, David Slovick, J. R. Soddy, J. T. Spare, Helen S. Standley, P. E. Steele-Perkins, Julius Stein, B. J. Stephens, Edna H. Stern, W. J. Stevens, S. D. Stock, F. G. Stoddart, P. H. D. Stone, E. W. Street, Olive Sutcliffe, W. H. Tattersall, D. H. Teasdale, D. J. Thomas, I. J. Thomas, J. I. Thomas, Nora Thomas, T. J. Thomas, R. E. M. Thompson, P. A. Thorn, C. D. Thornley, A. B. Tompkins, A. C. Turner, E. G. Turner, P. S. Tweedy, E. F. Twiss, J. S. Twist, C. R. Veall, Albert Venner, P. M. Vicary, D. A. Vyrnwy-Jones, R. H. Walker, P. R. Walsh, Barbara H. Ward, R. H. Welch, T. A. Werner, K. W. Wilkinson, P. E. D. S. Wilkinson, John Wilks, J. E. Williams, Norman Williams, J. M. Wilson, M. G. Wilson, R. R. Wilson, Matilda Winternitz, Myer Wohl, Basil Wolman, F. E. Woodthorpe, Marion E. F. Woollaston, J. H. Zibli, F. B. Zwink.

Diplomas were granted, jointly with the Royal College of Surgeons, to the following candidates :—

D.P.H.—G. M. Hobbin, Henry Lomas, A. J. Moss-Blundel.

D.M.R.—R. Rewcastle Forbes Bertram, C. H. Goldmann.

Diplomas in anæsthetics were also granted to the candidates named in the report of the meeting of the Royal College of Surgeons in our issue of Dec. 20, and in psychological medicine and in laryngology and otology to those named in our issue of Jan. 17.

Royal College of Obstetricians and Gynæcologists

At a meeting of the council of the college held on Jan. 31, with Prof. W. Fletcher Shaw, the president, in the chair, the following were elected to the membership :—

V. H. Barnett, Berkhamsted; H. H. F. Barns, London; Mary A. M. Bigby, London; A. B. Concanon, London; Mary D. Daley, London; M. L. Gaudin, R.A.F., Canada; L. A. Ledingham, London; K. M. MacKenzie, Sheffield; Eleanor M. Mills, Manchester; Lilian M. N. Raftery, London; Mary R. Thompson, Manchester.

Dr. David Spencer Foster, R.A.F., was admitted to the membership in absentia.

Medical Research Council of Ireland

The council has made the following awards during last half of 1941 :—

Dr. F. J. Geoghegan, whole-time grant for one year to carry out an investigation at the National Maternity Hospital, Dublin, under the direction of Prof. John McGrath (1) of the value of the Hogden pregnancy test and (2) of intracranial hæmorrhage in the new-born.

Dr. Einhert Kawerau, part-time grant for six months to undertake a survey in the department of biochemistry, Trinity College, Dublin, under the direction of Prof. W. R. Fearon, of the distribution of vitamin C in the Irish natural food products and emergency sources.

Prof. J. Brontë Gatenby, D.Sc., Grant-in-aid to carry out an investigation into the function of the acrosome in mammalian fertilisation.

The following have had their grants renewed: Mr. P. J. Boyle, M.Sc., Dr. Oliver FitzGerald, Dr. D. K. O'Donovan, Dr. Ninian Falkiner, Prof. Hans Sachs, and Dr. R. A. Q. O'Meara.

Tuberculosis Association

A meeting of this society will be held at 26, Portland Place, London, W.1, on Saturday, Feb. 21, at 10.30 A.M., when Dr. G. T. Hebert, the president, will make a statement on the future policy of the association. At 11.30 A.M. there will be a discussion on the rehabilitation of the tuberculous with special reference to the Ministry of Labour's interim scheme for the training and resettlement of disabled people. At 2.30 P.M. there will be an informal clinical meeting.

Biochemical Society

A meeting of this society will be held at the British Post-graduate Medical School, Ducane Road, London, W.12, on Friday, Feb. 13, at noon.

Medical Casualties

Captain William Jenkins Low, L.R.C.P.E., R.A.M.C., has been posted as missing.

P/T/Surgeon Lieutenant A. R. Barrett, R.N.V.R., H.M.S. *Stanley*, and T/Surgeon Lieutenant R. Stewart, R.N.V.R., H.M.S. *Audacity*, have been posted as missing, presumed killed.

Eugenics Society

The Galton anniversary luncheon of this society will be held at the Eccleston Hotel, London, S.W.1, on Thursday, Feb. 17, at 1 P.M. Lord Horder will take the chair and Prof. J. D. Bernal, F.R.S., will speak on the need for a social sciences research council.

Pharmaceutical Society of Great Britain

Dr. Philip Hamill will be unable to give his lecture to this society on Feb. 11. Instead on Thursday, Feb. 12, at 2.30 P.M., Sir Walter Langdon-Brown will speak on medicine, magic and reason. (17, Bloomsbury Square, London, W.C.1.)

British Orthopædic Association

Mr. J. R. Girdlestone of Oxford has been elected president of the association in succession to Prof. T. P. MacMurray of Liverpool.

Notes, Comments and Abstracts

MEDICAL FILMS

AN audience of between three and four hundred attended the joint meeting of the London Scientific Film Society and the Socialist Medical Association on Jan. 31, when a programme of medical films was shown at the Imperial Institute. The first was the comparatively well-known nutrition film *Enough to Eat*, directed by Edgar Anstey with Julian Huxley as commentator. Though made in 1935, this film is not out of date, in spite of the quantities of first-class protein and other delicacies, such as the extinct banana, which provoked incredulous laughter. Malnutrition is commoner in war-time, and the problem is no longer purely economic but one of distribution of available foodstuffs to those who need them most—whether to increase production or to preserve health. The present inequitable distribution of food—for example, fish (a lot of which still goes to the better restaurants)—and other anomalies like bogus wholemeal bread and the black markets must be ousted in favour of increased canteen facilities in industry, more British restaurants, and fair distribution of essential foods.

Defeat Diphtheria, produced by Paul Rotha for the Ministry of Information, is a good example of an instructional film designed to improve public health. It gives an outline of the subject, shows the simple technique of immunisation and Schick testing and encourages parents to bring their children for treatment. It has been shown with success in rural communities, and the commentary by John Hilton is almost too persuasive. A complete antithesis was *Tell Me if it Hurts*. Instead of building up the kind and clever doctor, it satirises the dentist's drill and the mental tortures of the dentally damned. If conservative dentistry is to increase it should not be shown to children or lay audiences without an "E" Certificate (suitable for exhibition to the edentulous). Made by a doctor about a visit to the dentist, it seems to each member of the audience like an agonised page from his own past. Perhaps a dentist will one day return the compliment with an equally penetrating study of a visit to the doctor.

Blood Transfusion, another by Paul Rotha for the Ministry of Information, outlines history, theory and practice, with special reference to war-time conditions; it is notable for some historical reconstructions, particularly of advanced work on cadaver blood carried out in the U.S.S.R. The film also shows scenes recently taken of Karl Landsteiner at work in the United States, and of the blood-transfusion service in the Spanish Civil War. Present day blood storage and processing is carried out on such a scale that in places this film looks like a tour of a United Dairies bottling plant.

Plastic Surgery in War-time, produced by the Realist Film Unit, shows results achieved in a plastic and maxillofacial unit, but without demonstrating surgical technique. This is disappointing since a more detailed exposition would be a guide and warning to those who first deal with casualties. They might then save from amputation bits and pieces which the skilled plastic surgeon could later use to advantage when reconstructing features and limbs; heroic excision of the wound may remove much valuable scaffolding of the kind. Sir Harold Gillies, in a technicoloured commentary, describes the injury each patient received and the treatment he has given or proposes to give; each patient then describes how he came by his injuries. The recital leaves auditors with a healthy respect for windows, steam pipes and other structures which may prove disfiguring if raids are resumed; now that most surface shelters have been reinforced, it seems probable that these are safer from the secondary hazards of bombing than most ordinary buildings. Rehabilitation of disfigured patients is not only a surgical problem; it was impressive to see how readily these described their experiences, and the balanced courage with which they looked into the future.

Colonel G. W. Heron, M.R.C.S., director of medical services, has been appointed an official member of the executive council of Palestine.

The National Health Insurance division of the department of Health for Scotland has been moved from St. Andrew's House, Edinburgh, to 11, Great Stuart Street, Edinburgh, 3.

ON CHEMOTHERAPY

IT is a pity that no publisher has thought it worth while to start a medical series on the Penguin Special plan, or better still one which allowed expansion up to a monograph at half a crown and shrinkage down to a booklet at threepence. There are a lot of lectures and articles which reach a more or less large public when published in a journal and could also count on a wide welcome if they were then put on sale in a more handy form. The Dr. Mann lectures on chemotherapy, by Mr. G. S. Whitby, D.Sc., director of the Chemical Research Laboratory at Teddington, are a good example. These were delivered to the Royal Society of Arts on April 28 and May 5, 1941, and they are published in the society's *Journal* for Oct. 17, but however generous Dr. Whitby is with his reprints his lectures will not reach a tenth of the doctors who would find them interesting reading and would like to have them handy for reference. Whitby does not deal with the sulphonamides as comprehensively as, for instance, D. G. Ardley has done in our own columns, but he interprets the word "chemotherapy" broadly, and in his first lecture explains the development of the drugs for protozoal diseases, the arsenicals, the amidines, quinine substitutes, and prostigmine. Then in his second he begins with prontosil, and traces the synthesis of its derivatives and their use in clinical medicine and the treatment of wounds, and ends with a section on stilbœstrol and synthetic vitamin K.

Infectious Disease in England and Wales

WEEK ENDED JAN. 24

Notifications.—The following cases of infectious disease were notified during the week: smallpox, 0; scarlet fever, 1076; whooping-cough, 1512; diphtheria, 905; paratyphoid, 9; typhoid, 9; measles (excluding rubella), 969; pneumonia (primary or influenzal), 1158; puerperal pyrexia, 145; cerebrospinal fever, 136; poliomyelitis, 7; polio-encephalitis, 2; encephalitis lethargica, 3; dysentery, 103; ophthalmia neonatorum, 83. No case of cholera, plague or typhus fever was notified during the week.

The number of civilian and service sick in the Infectious Hospitals of the London County Council on Jan. 21 was 1274, including scarlet fever, 131; diphtheria, 232; measles, 36; whooping-cough, 510; enteritis, 51; chicken-pox, 45; erysipelas, 23; mumps, 30; poliomyelitis, 1; dysentery, 18; cerebrospinal fever, 22; puerperal sepsis, 13; enteric fevers, 4; german measles, 1; glandular fever, 1; other diseases (non-infectious), 61; not yet diagnosed, 95.

Deaths.—In 126 great towns there were no deaths from enteric fevers, scarlet fever or measles, 10 (2) from whooping-cough, 31 (2) from diphtheria, 42 (9) from diarrhœa and enteritis under 2 years, and 74 (10) from influenza. The figures in parentheses are those for London itself.

Deaths from influenza were scattered over thirty-six great towns, Birmingham reporting 9 and Manchester 7, no other town more than 3. There were 3 fatal cases of diphtheria at Liverpool.

The number of stillbirths notified during the week was 190 (corresponding to a rate of 41 per thousand total births), including 14 in London.

Births, Marriages and Deaths

BIRTHS

IRVINE.—On Jan. 31, in London, the wife of Surgeon Lieutenant Gerard Irvine, R.N.—a son.

MOORE.—On Jan. 26, at Moseley, Birmingham, the wife of Major L. H. G. Moore, R.A.M.C.—a son.

TAYLOR.—On Jan. 25, at Sidcup, the wife of Lieutenant W. J. Taylor, R.A.M.C.—a daughter.

TEMPLE.—On Jan. 27, at Edinburgh, the wife of Surgeon Lieutenant J. Li. Temple, R.N.V.R.—a daughter.

MARRIAGES

THOMPSON—MARSH.—On Jan. 24, at Wordsley, near Stourbridge, James Wesley Thompson, M.B., lieutenant R.A.M.C., to Brenda Dorothea Marsh.

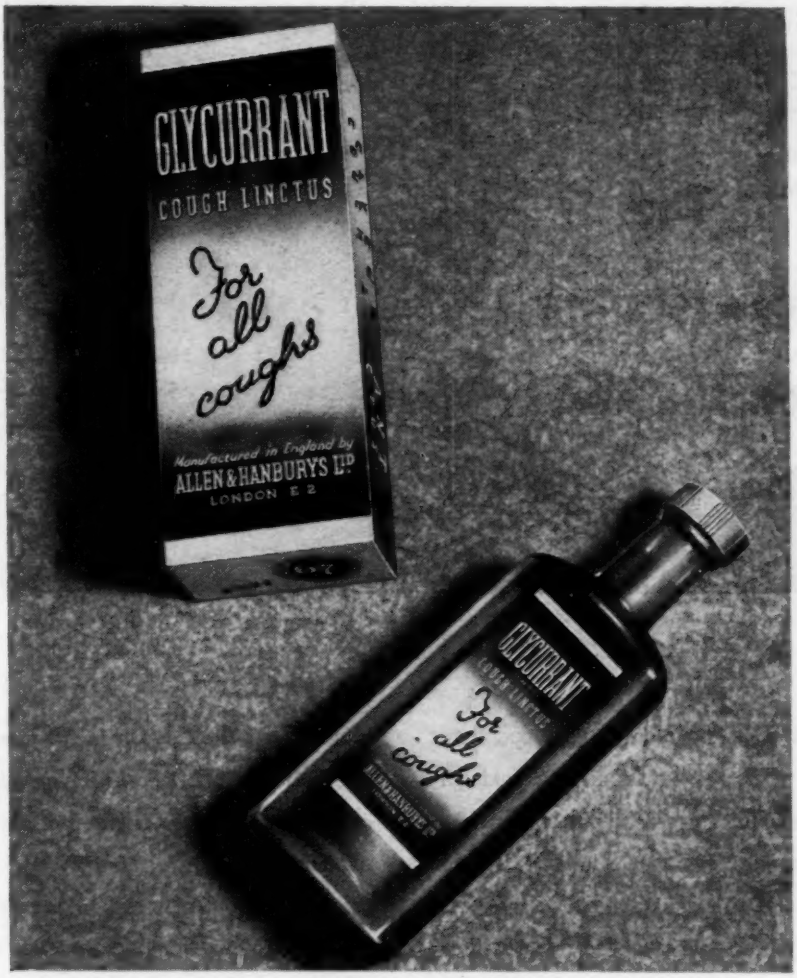
TOWNSEND—HOWARD.—On Jan. 24, in Ceylon, Raymond Francis Townsend, M.R.C.S., surgeon lieutenant, R.N.V.R., to Lorna Fitzalan Howard.

DEATHS

DARLEY.—On Feb. 1, at Glenariff House, West Haddon, Rugby, Alfred Russell Darley, M.D. DUBL.

GODDARD.—On Jan. 31, at Woodstock, Marine Drive, Rottingdean, Charles Ernest Goddard, O.B.E., M.D. DURH., aged 82.

HATHAWAY.—On Jan. 28, at Windsor, Frank John Hathaway, M.D. EDIN., aged 65.



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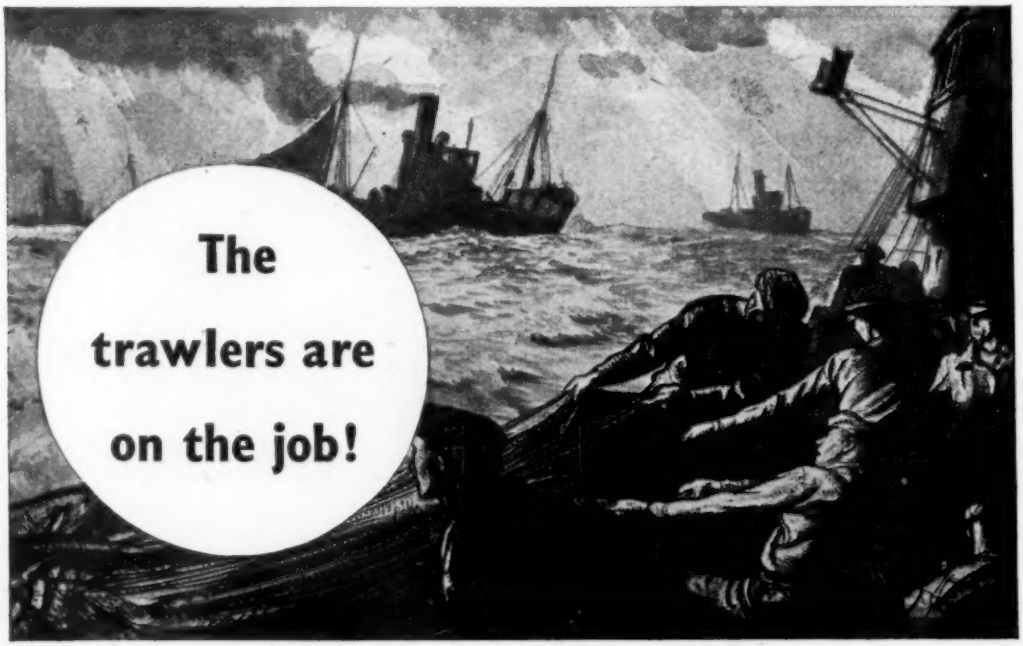

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BRITISH POSTGRADUATE MEDICAL SCHOOL

(UNIVERSITY OF LONDON)

WAR SURGERY OF THE CHEST

16th to 20th February, 1942

Monday, 16th Feb.	10 A.M.	Introductory Lecture ..	Mr. A. Tudor Edwards, M.D., F.R.C.S.
	11.30 A.M.	Anatomy, Physiology, and Pathology of Chest Wounds.	Mr. T. Holmes Sellors, D.M., M.Ch., F.R.C.S.
	2 P.M.	The Pathology of Wounds of the Chest.	Mr. O. S. Tubbs, F.R.C.S.
Tuesday, 17th Feb.	10 A.M.	The Surgery of the Open Thorax.	Mr. C. Price Thomas, F.R.C.S.
	11.15 A.M.	Anæsthesia in Chest Wounds.	Dr. H. Woodfield Davies, B.A., L.M.S.S.A.
	1.30 P.M.	Closed Wounds of Chest, &c.	Prof. J. A. Nixon, C.M.G., M.D., F.R.C.P.
	2.30 P.M.	Operative Demonstrations on the Cadaver.	Mr. A. K. Henry, M.Ch., F.R.C.S.
Wednesday, 18th Feb.	10 A.M.	Gunshot Wounds of the Heart.	Prof. G. Grey Turner, LL.D., D.Ch., M.S., F.R.C.S.
	11.15 A.M.	Radiography in Gunshot Wounds of the Chest.	Dr. J. Duncan White, M.B., Ch.B., D.M.R.E.
	2 P.M.	Thoracico-abdominal Wounds.	Surgeon Rear-Admiral G. Gordon-Taylor, O.B.E., F.R.C.S.
	3.15 P.M.	Drainage of Pleura ..	Mr. R. C. Brock, M.S., F.R.C.S.
Thursday, 19th Feb.	10 A.M.	Treatment of Wounds of Chest Wall.	Mr. N. Barrett, M.Ch., F.R.C.S.
	11.15 A.M.	The Early Management and Nursing of Patients with Chest Wounds.	Mr. N. Barrett, M.Ch., F.R.C.S.
	2 P.M.	Demonstration of Cases at Brompton Hospital, S.W.3.	Mr. A. Tudor Edwards, M.D., F.R.C.S.
Friday, 20th Feb.	10 A.M.	Other Aspects of Closed Wounds of Chest.	Dr. A. J. Morland, F.R.C.P.
	11.15 A.M.	Late Results of Gunshot Wounds.	Mr. J. E. H. Roberts, O.B.E., F.R.C.S.
	2 P.M.	Operations on Cadaver, Mediastinum, Heart, &c.	Mr. A. K. Henry, M.Ch., F.R.C.S.

The fee for the Course is one guinea. Officers of the Armed Forces wishing to attend these lectures without payment of the fee should apply through their respective Director-Generals. Applications for tickets should be addressed to the DEAN, British Postgraduate Medical School, Ducane-road, W.12.

Further War Surgery Courses will commence as follows:—

WAR SURGERY OF NERVOUS SYSTEM .. MONDAY, 2ND MARCH, 1942.

OPERATIVE SURGERY IN WARTIME INCLUDING CADAVER SURGERY .. MONDAY, 16TH MARCH, 1942.

ROYAL LONDON OPHTHALMIC HOSPITAL

MOORFIELDS EYE HOSPITAL, CITY ROAD, E.C.1 **NEW TERM BEGINS IN MARCH**

The D.O.M.S. COURSE will begin on MARCH 9th, 1942

For further particulars apply to the Secretary to the Medical School at the Royal London Ophthalmic Hospital, City Road, E.C.1, or to the Dean, ROBERT C. DAVENPORT, F.R.C.S.

L. M. S. S. A.

FINAL EXAMINATION: SURGERY, March 9th, April 13th, May 11th, 1942; MEDICINE, March 16th, April 20th, May 18th, 1942; MIDWIFERY, March 17th, April 21st, May 19th, 1942.

For regulations apply REGISTRAR, Apothecaries' Hall, Black Friars-lane, London, E.C.4.

London Hospital Medical College.

(UNIVERSITY OF LONDON.)

HUTCHINSON TRIENNIAL PRIZE, 1938–41.

The above Prize will not be awarded as the Dissertations received do not attain the required standard.

Candidates may obtain their Dissertations on application to the Dean. A. E. CLARK-KENNEDY, M.D., F.R.C.P., Dean. Turner-street, London, E.1.

National Hospital Queen Square for

DISEASES OF THE NERVOUS SYSTEM, Queen-square, W.C.1.

A series of CLINICAL DEMONSTRATIONS and LECTURES on NEUROLOGY will be given at this Hospital, at 4.30 P.M. on weekdays from Monday to Friday, from 23rd February to 27th March.

These demonstrations will be open free to all Medical Men and Women and to Senior Medical Students.

University of London.

Applications are invited from members of the University for GRANTS from the Central Research Fund for assisting specific projects of research and for the provision of special material and apparatus.

Application forms (which must be returned by 31st March, 1942) and further particulars may be obtained from the ACADEMIC REGISTRAR, 42, Gyles-park, Stanmore, Middlesex.

Imperial College of Science and

TECHNOLOGY.

(TECHNICAL OPTICS SECTION.)

VISION AT LOW INTENSITIES.

A special course of Lectures and practical work will be given by Dr. W. D. WRIGHT, A.R.C.S., D.Sc., during the week commencing 16TH FEBRUARY, 1942. The course will relate to practical problems encountered in vision at night.

Application for further particulars and for entry forms should be made to the REGISTRAR, Imperial College of Science and Technology, Prince Consort-road, London, S.W.7.

THE COPPICE, NOTTINGHAM

HOSPITAL FOR MENTAL DISEASES

President: The Right Hon. LORD BELPER

REGISTERED HOSPITAL for Voluntary, Temporary, or Certified PRIVATE PATIENTS of UPPER and MIDDLE CLASSES. Own kitchen garden. Modern forms of treatment, including Electro-shock Therapy. Out-door games, cinema visits, motor drives arranged. Visiting Chaplain.

For terms, &c., apply to: Dr. G. M. WODDIS, Medical Superintendent. Telephone: 64117 Nottingham.

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Mrs. MILLICENT HICKS, *Superintendent.* W. J. HICKS, *Secretary.*

Telephone: WELbeck 2728. Telegrams: "ASSISTIAMO, LONDON."

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CHEADLE ROYAL CHEADLE CHESHIRE

A Registered Hospital for MENTAL DISEASES, and its Seaside Branch, GLAN-Y-DON, Colwyn Bay, N. Wales

THE object of this Hospital is to provide the most efficient means for the treatment and care of those of the Upper and Middle Classes suffering from MENTAL and NERVOUS DISEASES. The Hospital is governed by a Committee appointed by the Trustees of the Manchester Royal Infirmary. VOLUNTARY, TEMPORARY, AND CERTIFIED PATIENTS RECEIVED

For Terms and further information apply to the MEDICAL SUPERINTENDENT Telephone: GATLEY 2231

CRICHTON ROYAL, DUMFRIES FOR NERVOUS AND MENTAL DISORDERS

Cases of Alcoholism and Drug Addiction are admitted. Every facility for individual treatment on the most modern lines. **Special Department for Insulin Therapy.** Fully equipped Gymnasium, Golf Course, and Indoor Swimming Pool. Specially trained Occupational and Recreational Therapists.

Medical Certificates given anywhere in the British Isles are valid for admission of patients.

Physician Superintendent: P. K. McCOWAN, J.P., M.D., F.R.C.P., D.P.M., Barrister-at-Law. Telephone: Dumfries 1119.

THE OLD MANOR, SALISBURY

Telephone: 3216 & 3217

A Private Hospital for the Care and Treatment of those of both sexes suffering from MENTAL DISORDERS

Extensive grounds. Detached Villas. Chapel. Garden Produce from own gardens. Terms very moderate.

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standing in 12 acres of ornamental grounds, with separate villas, tennis courts, etc. Patients or Boarders may visit the Home by arrangement.

Illustrated Brochure on application to the Medical Superintendent, The Old Manor, Salisbury.

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FOR NERVOUS AND MENTAL DISORDERS

Monks Orchard, Monks Orchard Road, Eden Park, Beckenham, Kent

Reg. Tel. Address: BETHLEM, BECKENHAM *Telephone:* SPRINGPARK 1180–1181

Station: EDEN PARK (Southern Railway)

President: HER MAJESTY QUEEN MARY *Vice-President:* SIR GEORGE WILKINSON, Alderman

Joint Treasurers: EDMUND STONE, Esq., and JOHN L. WORSFOLD, Esq., O.B.E.

Physician-Superintendent: J. G. PORTER PHILLIPS, Esq., M.D., F.R.C.P.

This REGISTERED Hospital is situated at Monks Orchard in some 250 acres of park, pleasure and farm grounds. Application can be considered on behalf of patients of the educated classes in a presumably curable condition.

With a view to early treatment voluntary or uncertified patients are admitted.

Patients who can contribute 5 guineas weekly towards the cost of treatment and maintenance may be received as vacancies arise. The Committee will also consider applications for admission at lower rates and in certain cases will be prepared to admit patients free of charge.

The comfort of sensitive patients is greatly enhanced by the fact that the majority are given single bedrooms.

TREATMENT ON MODERN PRINCIPLES. Every facility for specialised investigation and treatment is provided in the Lord Wakefield of Hythe Science and Treatment Unit, including RADIOLOGICAL and DENTAL DEPARTMENTS, BIO-CHEMICAL, PATHOLOGICAL and PSYCHOLOGICAL LABORATORIES.

The Medical Staff have access to a panel of Consultants in cases which present unusual symptoms requiring specialised investigation and treatment.

Under the direction of qualified officers HELIO-THERAPY, HYDRO-THERAPY and ELECTRO-THERAPY are administered in the Physio-Therapy Department.

SPECIAL TREATMENT (Insulin, Cardiazol, Trianol, &c.) is given to suitable cases.

OCCUPATIONAL THERAPY in the form of various Arts and Crafts is actively encouraged from the medical aspect and under the guidance of a competent instructress this department has proved most effective as a therapeutic factor in all stages of mental illness.

The promotion of physical fitness is a prominent item of treatment and this is enhanced by arrangements for patients to take part in Outdoor and Indoor Sports and Entertainments, and special attention is drawn to the physical drill and dancing classes which form part of the regular hospital routine.

Application should be made to the Physician-Superintendent.

The Pioneer Hospital, opened 1796, for the humane treatment of those suffering from Nervous and Mental Disorder

THE RETREAT, YORK

This Hospital of 200 beds, administered by a Committee of the Society of Friends, combines what is best in the investigation and treatment of nervous illness with a sympathetic and friendly atmosphere. Last year 156 patients were admitted, of whom 132 were voluntary cases.

Much curative work is accomplished in our mental hospitals to-day and the recovery rate compares very favourably with that of our general hospitals.

For information and terms of admission apply to:—
The Physician Superintendent, ARTHUR POOL, M.R.C.P.
(Telephone: York 3612) who is available for consultation

CALDECOTE HALL

NUNEATON
WARWICKSHIRE
('Phone: Nuneaton 241)

Residential treatment of

"Nervous Disorders" & Alcoholism

(Certifiable cases are not received)

This beautiful mansion situated in the heart of the country (less than two hours from London by L.M.S.R.) and surrounded by charming pleasure grounds in which games and outdoor occupational therapy are available is devoted to the treatment of Alcoholism and "Nerves" by psychotherapeutic and ancillary methods.

Illustrated Brochure and particulars obtainable from A. E. CARVER, M.D., D.P.M., Resident Medical Superintendent.

THE COTSWOLD SANATORIUM

On the Cotswold Hills seven miles from Cheltenham, Stroud and Gloucester. **Fully equipped for the treatment of all** forms of Tuberculosis. **Terms: 5½ to 9½ guineas per week, inclusive.** Full particulars from MEDICAL SUPERINTENDENT, Cotswold Sanatorium, Cranham, Gloucester. *Telephone:* Witcombe 81. *Telegrams:* "Hoffman, Birdlip."

CITY OF LONDON MENTAL HOSPITAL

Near DARTFORD, KENT.

Ladies and Gentlemen received for **treatment** under certificates, and without certificates as either VOLUNTARY or TEMPORARY PATIENTS, at a weekly fee of £2 9s., and upwards.

SPRINGFIELD HOUSE

'Phone: BEDFORD 3417. **Near BEDFORD**

For Mental Cases with or without Certificates.

Ordinary Terms: Five Guineas per week (including Separate Bedrooms for all suitable cases without extra charge).

For forms of admission, &c., apply to the Resident Physician, CEDRIC W. BOWER.

INTERVIEWS IN LONDON BY APPOINTMENT.

26

Middlesex County Council.

RESIDENT CASUALTY OFFICER (B1) required for NORTH MIDDLESEX COUNTY HOSPITAL, Edmonton, N.18. Must be registered medical practitioners (including suitably qualified R practitioners in B2 or B1 posts) who have held house appointments in general hospitals and had good all-round experience. Salary £350 per annum, plus cost-of-living bonus. Board, lodging, and laundry. Whole-time duties under Medical Superintendent will include dealing with casualties and admissions to hospital and such other duties as may be required. Opportunity for major surgery. Appointment, subject to medical examination and one month's notice, is primarily for six months with possibility of extension for further six months. Hours of duty are 10 A.M. to 6 P.M. daily, with Saturday afternoons and Sundays free. Post vacant end February.

Applications, stating age, nationality, qualifications with dates, experience, and details of previous appointments, to the undersigned. No application forms provided. Relationship to any member or officer of the Council to be disclosed. Copies of not more than three recent testimonials. Canvassing, directly or indirectly, will disqualify. Closing date 14th February, 1942.

C. W. RADCLIFFE, "B3," Clerk of the County Council.
Guildhall, Westminster, S.W.1.

Examining Surgeons:

FACTORIES ACT, 1937.

The following appointments as Examining Surgeon under the Factories Act, 1937, are vacant.

Applications should be sent to the CHIEF INSPECTOR OF FACTORIES, 28, Broadway, London.

District	County	Latest date for receipt of application
TEDDINGTON ..	MIDDLESEX ..	17th February, 1942
DROITWICH ..	WORCESTER ..	17th February, 1942
KILMORY ..	BUTE	17th February, 1942
KILBRIDE ..	BUTE	17th February, 1942

National Temperance Hospital,

Hampstead-road, London, N.W.1.

Applications are invited from registered medical practitioners (British), Male or Female, for the appointment of CASUALTY OFFICER (A), who will require to act as House Surgeon under the M.S. The appointment is for a period of six months, dating as from 1st March. Salary at least £120 per annum, with board, residence, and laundry allowance.

Applications, stating qualifications, age, &c., with copies of not more than three testimonials, by the 11th February, addressed to the SECRETARY.

Hampstead General Hospital.

(Region 5, Sector 4, M.S.)

Applications are invited from single medical Men or Women, including R practitioners holding A posts, as follows:—

(1) HOUSE SURGEON (B2), resident at Hampstead, N.W.3, for six months, vacant 1st March. Salary £133 6s. 8d. per annum. (2) CASUALTY MEDICAL OFFICER (B2), resident at Out-patient Department, Camden Town, N.W.1, for six months, vacant 1st March. Salary £100 per annum, plus an allowance of £50 per annum for duties in connexion with First-Aid Post established there.

Applications on the prescribed form, with copies of three testimonials, to be returned by 16th February.

KENNETH A. F. MILES, House Governor.

Charing Cross Hospital.

MEDICAL REGISTRAR (RESIDENT).

Applications are invited from registered medical practitioners (Male) for the above B1 appointment. Suitably qualified R practitioners holding B2 or B1 appointments are invited to apply. Minimum commencing salary £350 per annum.

Applications, together with copies of three testimonials, should be sent, to arrive not later than first post 16th February, 1942, to: GEORGE J. JONES, Secretary.

Bolingbroke Hospital,

Wandsworth Common, S.W.11.

Applications are invited from registered medical practitioners (Male) for the appointment of—

(1) HOUSE SURGEON (B2), including R practitioners who now hold A posts. Salary is at the rate of £200 per annum, with full residential emoluments. The present Casualty Officer is a candidate for this post.

(2) CASUALTY OFFICER (unmarried) (A). Salary is at the rate of £120 per annum, with full residential emoluments. R practitioners within three months of qualification may apply.

The appointments will be for six months commencing 1st March, 1942.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of three recent testimonials, should be sent on or before the 15th February, 1942, to: W. S. RANDOLPH BISS, Secretary-Superintendent.

31st January, 1942.

The Queen's Hospital for Children,

Hackney-road, E.2.

RESIDENT MEDICAL OFFICER required 17th March, 1942 (B2 post). Applications are invited from registered medical practitioners, including R practitioners holding A posts when appointment will be limited to six months, otherwise renewable for subsequent similar periods. Salary at rate which with certain additions will amount to not less than £250 per annum, with board, lodging, and laundry. Candidates must be prepared to participate in the Emergency Hospital arrangements in connexion with which beds are reserved.

Applications must be made on forms to be obtained from the undersigned, and should be sent in, with copies of not more than three testimonials, on or before 23rd February, 1942.

CHARLES H. BESSELL, Secretary.

The London Homœopathic Hospital

(Incorporated by Royal Charter),

Great Ormond-street and Queen-square, Bloomsbury, W.C.1.

Applications are invited from registered medical practitioners, Male and Female (including R practitioners within three months of qualification), for the appointment of HOUSE SURGEON (A), to become vacant on 1st March, 1942. The appointment will be for a period of six months. Salary is at the rate of £180 per annum, including grant for medical services, with full residential emoluments. Selected candidates will be required to attend for interview.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of testimonials, to be sent as soon as possible to: L. J. KNOWLES, Secretary.

The South London Hospital for Women,

Clapham Common, S.W.4.

Applications are invited from medical Women for the following appointment: HOUSE SURGEON (A), for a period of six months from 1st April. Salary at the rate of £100 per annum, with full residential emoluments.

Applications, stating age, nationality, qualifications with dates, and accompanied by copies of three recent testimonials, must reach the SECRETARY at the Hospital by 14th March.

The South London Hospital for Women,

Clapham Common, S.W.4.

Applications are invited from medical Women for the following appointments: HOUSE PHYSICIAN (A) and HOUSE SURGEON (A), for a period of six months from 1st March. Salary in both cases at the rate of £100 per annum, with full residential emoluments.

Applications, stating age, nationality, qualifications with dates, and accompanied by copies of three recent testimonials, must reach the SECRETARY at the Hospital by 14th February.

Royal West Sussex Hospital,

CHICHESTER, SUSSEX. (334 Beds.)

Applications are invited from registered medical practitioners for the appointment of CASUALTY OFFICER (A), vacant 1st March, 1942, including R practitioners within three months of qualification. Appointment will be for six months. Salary £120 per annum, with full residential emoluments. The post includes general work.

Applications, stating age, qualifications with dates, and nationality, together with copies of three recent testimonials, should reach the undersigned by 18th February, 1942.

5th February, 1942. K. H. WILLIAMS, House Governor.

Hull Royal Infirmary.

Applications are invited from registered medical practitioners for the following posts which will become vacant in April:—

PARENT HOSPITAL: (1) HOUSE SURGEON (B2). (2) CASUALTY OFFICER (A).

SUTTON BRANCH HOSPITAL: (3) HOUSE PHYSICIAN (B2). (4) HOUSE SURGEON (B2).

R practitioners holding A posts may apply for the B2 appointments which will be limited to six months, and those within three months of qualification for the A post for a period of six months.

Posts (1) and (4) are recognised for the F.R.C.S. examinations and post (3) is recognised for the M.D. (London) examination.

The salary for each post is at the rate of £175 (plus £25 war bonus) per annum, with full residential emoluments.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of recent testimonials, should be sent to: R. J. CARLESS, House Governor.

City of Leicester.

CITY GENERAL HOSPITAL.

Applications are invited from registered medical practitioners for the appointment of a RESIDENT MEDICAL OFFICER (B2) mainly for medical duties. R practitioners who now hold A posts may apply when appointment will be limited to six months; otherwise it will be renewable for a further six months. Salary is at the rate of £300 per annum, with full residential emoluments. Preference will be given to those with, or reading for, higher qualifications.

Applications (on forms supplied), accompanied by copies of three recent testimonials, must be submitted as soon as possible, endorsed "R.M.O.," and addressed to—

E. K. MACDONALD, Medical Officer of Health.

Health Department, Grey Friars, Leicester, February, 1942.

County Borough of Blackburn.

Applications are invited from registered medical practitioners (Male or Female), including R practitioners within three months of qualification, for the post of RESIDENT JUNIOR ASSISTANT MEDICAL OFFICER (A) at QUEEN'S PARK HOSPITAL AND INSTITUTION, Blackburn, at a salary of £200 per annum, together with board, apartments, and attendance. The appointment will be limited to a term not exceeding one year, or if an R practitioner is appointed a period of six months.

Further particulars may be obtained from the Public Assistance Officer, Cardwell-place, Blackburn, to whom applications, stating age, qualifications, and experience, accompanied by copies of three recent testimonials, must be sent.

Blackburn. CHAS. S. ROBINSON, Town Clerk.

Beckett Hospital and Dispensary,

BARNSLEY.

Applications are invited from registered medical practitioners for the appointment of RESIDENT HOUSE PHYSICIAN (B2), to become vacant on 28th February, including R practitioners who now hold A posts when appointment will be limited to six months. The salary is at the rate of £150 per annum, with full residential emoluments.

Applications, stating age, nationality, qualifications with dates, experience, and present post, and accompanied by copies of three recent testimonials, should be sent as soon as possible to: ARTHUR L. BOURNE, Secretary-Superintendent.

2nd February, 1942.

HIS MAJESTY'S COLONIAL SERVICE

THE COLONIAL MEDICAL SERVICE

VACANCIES FOR MEDICAL OFFICERS

The maintenance of an efficient Colonial Medical Service constitutes a vital part of the national war effort and it is most important that the Service should be assured of an adequate supply of doctors.

The Secretary of State for the Colonies therefore invites applications from doctors possessing a medical qualification registrable in the United Kingdom who are British subjects and who are under thirty-five years of age.

Medical Officers are appointed in the first instance for general service. But there are ample opportunities for work in special branches of medicine and surgery, in public health and in medical research.

The normal salary scale is from £630 to between £1,000 and £1,120. There are large numbers of super-scale posts to which promotion is made on merit and which carry higher salaries.

Government quarters, in many cases free of rent, and first-class passages to and from the Colonies are provided, and an adequate pension scheme is in force.

Selected candidates are normally required to attend a course of instruction in Tropical Medicine and Hygiene either before proceeding overseas or during their first period of leave.

Further particulars, including the regulations governing admission to the Colonial Medical Service, may be obtained from the Director of Recruitment (Colonial Service), 2, Park-street, London, W.1.

Winterton Hospital.

(1060 Beds.)

Applications are invited from registered medical practitioners (Male or Female) for the following appointments, to be vacant on 18th February, 1942. R practitioners within three months of qualification may apply when appointments will be for a period of six months:—

HOUSE SURGEON (A).

HOUSE SURGEON (A) to FRACTURE CLINIC.

Salary at the rate of £120 per annum, with board, residence, and laundry.

Applications, stating age, qualifications with dates, nationality, and accompanied by copies of three recent testimonials, should be sent as soon as possible to the MEDICAL SUPERINTENDENT.

Winterton Hospital, Sedgefield, Stockton-on-Tees, Co. Durham.

Bootle General Hospital,

Linacre-lane, BOOTLE, LIVERPOOL, 20.

(123 Beds.)

CASUALTY OFFICER.

Applications are invited from registered medical practitioners, Male and Female, for the above A appointment, including R practitioners within three months of qualification. Appointment is for period ending 30th June, 1942. Salary £150 per annum, with full residential emoluments.

Applications, stating age, nationality, qualifications, and accompanied by copies of three recent testimonials, should be sent to: A. J. COOPER, Superintendent.

The Royal Liverpool United Hospital.

LIVERPOOL ROYAL INFIRMARY.

Applications are invited from registered medical practitioners for the appointment of RESIDENT SURGICAL OFFICER (B1). Duties to commence 1st March, 1942. Applicants should have held house appointments and had surgical experience. Preference will be given to candidates holding Diploma of F.R.C.S. Suitably qualified R practitioners holding B2 or B1 appointments are invited to apply. Salary is at the rate of £150 per annum, with board and residence.

Applications, stating age, nationality, qualifications, with experience and details of previous appointments, and (except in the case of students of the Liverpool Medical School) accompanied by copies of three recent testimonials, should be sent not later than Wednesday, 18th February, 1942, to—

A. V. J. HINDS, Secretary.

The Royal Liverpool United Hospital, 60, Rodney-street, Liverpool 1, 7th February, 1942.

Harrogate and District General and M.S. HOSPITAL.

(420 Beds.)

(Recognised by the R.C.S. for Final F.R.C.S. Examination requirements.)

Applications are invited from registered medical practitioners (Male) for the position of HOUSE SURGEON AND CASUALTY OFFICER (A) to SPECIAL DEPARTMENTS, now vacant. R practitioners within three months of qualification may apply when appointment will be for a period of six months. Salary at the rate of £150 per annum, and residence.

Applications as soon as possible to the SECRETARY, Harrogate and District General Hospital.

Doncaster Royal Infirmary.

Applications are invited from registered medical practitioners, including R practitioners within three months of qualification, for the following appointments: (1) CASUALTY HOUSE SURGEON (A) (Male), and (2) HOUSE SURGEON (A) (Male). Required immediately. The appointments are for six months. Salary at the rate of £175 per annum, with residence, board, and laundry. This large industrial area offers excellent opportunity for gaining experience.

Applications, accompanied by not more than three testimonials, to be sent immediately to—

R. LANCASTER, Secretary-Superintendent.

City and County of Newcastle upon TYNE.

NEWCASTLE GENERAL HOSPITAL. (900 Beds.)
SHOTLEY BRIDGE HOSPITAL. (900 Beds.)

APPOINTMENT OF HOUSE PHYSICIANS (A) AND HOUSE SURGEONS (A).

Applications are invited from registered medical practitioners for the above appointments, including R practitioners within three months of qualification. The appointments will be tenable for a period of six months. Salary £150 per annum, together with the usual residential emoluments.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of two recent testimonials, should be forwarded immediately to the MEDICAL OFFICER OF HEALTH, Health Department, Town Hall, Newcastle upon Tyne, 1.

County Borough of Merthyr Tydfil.

APPOINTMENT OF A TEMPORARY ASSISTANT MEDICAL OFFICER OF HEALTH AND SCHOOL MEDICAL OFFICER.

Applications are invited for the above appointment at the rate of £500 per annum, plus war bonus amounting to £24 per annum and travelling expenses. The appointment will be for six months and the person appointed must be a registered medical practitioner, holding a Diploma in Public Health, and must have had experience in infectious diseases, school medical service, and child welfare work. The duties will be carried out under the general direction of the Medical Officer of Health, to whom applications, with copies of three recent testimonials, must be forwarded by 14th February.

T. H. STEPHENS, Medical Officer of Health.

Town Hall, Merthyr Tydfil.

East Suffolk and Ipswich Hospital.

(407 Beds—8 Residents.)

Applications are invited from registered medical practitioners, including R practitioners within three months of qualification, for the appointment of—

HOUSE SURGEON (A). 1st February.

HOUSE SURGEON (A) to the EAR, NOSE, THROAT, AND OPHTHALMIC DEPARTMENTS. 18th February.

The latter post is a recognised one for postgraduate study for diplomas of D.L.O. and D.O.M.S. The appointments are for six months. Salary at the rate of £144 per annum, with full residential emoluments.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of three recent testimonials, to be sent to: ARTHUR GRIFFITHS, Secretary.

The Hospital, Ipswich, 7th February, 1942.

The Lawn, Lincoln.

(Registered Hospital for Mental and Nervous Diseases.)

Applications are invited from registered medical practitioners for an ASSISTANT MEDICAL OFFICER (B2), one with previous mental hospital experience preferred. R practitioners who now hold A posts may apply when appointment will be limited to six months.

Electric Convulsion Therapy is in use. Salary £300 per annum, with emoluments and war bonus.

Apply, THE CHAIRMAN OF GOVERNORS, The Lawn, Lincoln.

The Prince of Wales's Hospital,

Greenbank-road, PLYMOUTH.

Applications are invited from registered medical practitioners for the appointment of HOUSE SURGEON (A), to become vacant on 4th March. R practitioners within three months of qualification may apply when appointment will be for a period of six months. Salary is at the rate of £132 per annum, with full residential emoluments.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of three recent testimonials, should be sent not later than 18th February to—

ARTHUR R. CASH, General Superintendent.

27th January, 1942.

County Borough of Middlesbrough.

MUNICIPAL HOSPITAL.

Applications are invited from unmarried registered medical practitioners (Male) for the position of ASSISTANT RESIDENT MEDICAL OFFICER (B2). R practitioners who hold A posts may apply when appointment will be limited to six months; otherwise it will be for a period of twelve months.

The salary is at the rate of £270 per annum, together with full residential emoluments.

Candidates should have had recent hospital experience.

In addition to hospital duties, the successful candidate will be required to undertake relief or holiday duty work of other whole-time members of the Corporation's medical staff as required.

The Municipal Hospital contains 353 Beds and is a training school for nurses, and affords excellent facilities for post-graduate work and experience.

The appointment is subject to the rules and regulations of the Middlesbrough Corporation. The successful candidate will be required to pass satisfactorily a medical examination.

Applications, stating age, qualifications, nationality, and particulars of present post and experience, together with copies of not more than three recent testimonials, should be sent to the Medical Officer of Health, Health Department, Municipal Buildings, Middlesbrough, immediately.

21st January, 1942. PRESTON KITCHEN, Town Clerk.

Walsall General Hospital.

(181 Beds.)

Applications are invited from registered medical practitioners for the appointment of CASUALTY OFFICER AND HOUSE SURGEON (A) to the ORTHOPÆDIC DEPARTMENT, to become vacant on the 1st March, 1942. R practitioners within three months of qualification may apply. The appointment will be for a period of six months. Salary at the rate of £150 per annum, with full residential emoluments.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of three recent testimonials, should be forwarded not later than the 16th February, 1942, to: R. C. MILLWARD, House Governor.

Walsall General Hospital.

Applications are invited from registered medical practitioners for the appointment of a HOUSE PHYSICIAN (A), to become vacant on the 1st March, 1942, including R practitioners within three months of qualification. The appointment will be for a period of six months. Salary at the rate of £150 per annum, with full residential emoluments.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of three recent testimonials, should be forwarded to the undersigned immediately.

R. C. MILLWARD, House Governor.

County Borough of Rochdale.

MUNICIPAL GENERAL HOSPITAL, BIRCH HILL.
(475 Beds.)

Applications are invited from registered medical practitioners (Male) for the post of TEMPORARY SENIOR ASSISTANT MEDICAL OFFICER (B1), including R practitioners holding B2 or B1 appointments. Previous hospital experience, including maternity and surgical work, is essential. The appointment will include certain services in connexion with the adjoining Public Assistance Institution. Salary at the rate of £350 per annum, rising by annual increments of £25 to £450 per annum, plus war bonus, together with board, residence, and laundry emoluments valued at £100 per annum. In the case of a married man emoluments will not include board but will include an unfurnished house and laundry.

Application forms may be obtained from the Medical Officer of Health, Public Health Offices, Baillie-street, Rochdale, and must be returned to him not later than Friday, the 13th of February, 1942. HARRY BANN, Town Clerk.

Burton-on-Trent General Infirmary.

Applications are invited from registered medical practitioners (Male) for the appointment of CASUALTY OFFICER AND HOUSE PHYSICIAN (A), including R practitioners within three months of qualification when appointment will be for six months. Salary at the rate of £150 per annum, with usual emoluments.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of three recent testimonials, to be sent to—

E. W. THORNLEY, Superintendent and Secretary.

The Children's Hospital, Sheffield (Inc.)

(157 Beds.)

Applications are invited from registered medical practitioners Male and Female (including R practitioners within three months of qualification), for the appointment of HOUSE PHYSICIAN (A), to become vacant on the 1st March, 1942. The appointment is for a period of six months, with salary at the rate of £100 per annum, with full residential emoluments.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of three recent testimonials, should be sent to the undersigned. The successful candidate must be a member of a Medical Defence Society.

T. H.G. GARTLAND, Superintendent and Secretary.

Staffordshire County Council.

ASSISTANT COUNTY MEDICAL OFFICER OF HEALTH AND MEDICAL OFFICER OF HEALTH.

Applications are invited for the joint whole-time appointment of an Assistant County Medical Officer of Health for the Administrative County of Stafford, and Medical Officer of Health for the Darlaston Urban District (population 20,300). The salary will be at the rate of £800 per annum, and will be subject to the provisions of the Local Government Superannuation Act, 1937.

Applicants must be fully qualified medical men with experience in public health duties and must hold the Diploma in Public Health. The person appointed will, as regards his duties as Assistant County Medical Officer of Health, act under the direction of the County Medical Officer of Health, and will be required to perform such duties as may be from time to time prescribed. As regards his duties as District Medical Officer of Health, the officer will be subject to the sole control and direction of the local Sanitary Authority.

The joint appointment is subject to the approval of the Minister of Health and Board of Education, and also, so far as the office of District Medical Officer of Health is concerned, to the provisions of the Sanitary Officers (Outside London) Regulations, 1935.

The joint appointment will be subject to three calendar months' notice on either side, subject, so far as the office of District Medical Officer of Health is concerned, to the consent of the Minister of Health.

The successful candidate will be required to pass a medical examination and to produce a birth certificate.

Forms of application may be obtained from the undersigned and should be returned by first post on the 12th February, 1942, together with copies of not more than three testimonials.

H. L. UNDERWOOD, Clerk of the County Council.

County Buildings, Stafford, 21st January, 1942.

Joint Committee of the County Councils

OF DURHAM AND NORTHUMBERLAND AND THE COUNTY BOROUGH COUNCILS OF GATESHEAD AND NEWCASTLE UPON TYNE.

ASSISTANT VENEREAL DISEASES MEDICAL OFFICER (MALE, TEMPORARY).

Applications are invited from Male medical practitioners experienced in the diagnosis and treatment of venereal diseases for the above whole-time appointment.

Duties include the investigation and treatment of male and female out-patients and in-patients, and commence 24th March, 1942, approximately. Salary £500 per annum, increasing by annual increments of £25 to a maximum of £700. Appointment for duration of the war, or subject to three months' notice on either side.

Applications, stating age, nationality, qualifications, special experience in venereal diseases work and other branches of medicine or public health, together with copies of testimonials or references, to be forwarded to the CLINICAL MEDICAL OFFICER, Joint Committee's Clinic, Newcastle General Hospital, Westgate-road, Newcastle upon Tyne, 4, from whom further particulars may be obtained.

Royal Northern Infirmary,

INVERNESS. (205 Beds.)

Applications are invited from registered medical practitioners, Male or Female, for the appointment of HOUSE SURGEON (A) for EAR, NOSE, AND THROAT DEPARTMENT, and of HOUSE PHYSICIAN (A), to commence duties on 1st March. The appointments are for six months. Salary at the rate of £100 per annum, with board, lodging, laundry, &c. Normal staff of five residents, who are required to be available for anæsthetics and general medical duties. R practitioners within three months of qualification may apply but must have obtained the sanction of the Scottish Central Medical War Committee.

Applications, stating age, qualifications with dates, and nationality, and copies of testimonials, to be sent to—

T. C. MACKENZIE, M.D., Medical Superintendent.

Pontefract General Infirmary

AND THE HYDES HOSPITAL. (112 Beds.)

Applications are invited from registered medical practitioners, Male, for the appointment of a HOUSE SURGEON (A), to become vacant immediately, including R practitioners within three months of qualification when appointment will be for a period of six months. Salary £150 per annum, with full residential emoluments.

Applications, stating age, qualifications with dates and nationality, and accompanied by copies of three recent testimonials, should be sent to the undersigned.

D. J. RICHARDS, Secretary-Superintendent.

City of Carlisle.

CITY GENERAL AND FUSEHILL HOSPITALS.
(250 Beds, Special Departments, and Emergency Beds.)

Applications are invited from registered medical practitioners for the appointment of JUNIOR MEDICAL OFFICER (A), fourth Resident. The salary is at the rate of £160 per annum, with full residential emoluments. R practitioners within three months of qualification may apply when appointment will be for a period of six months. The appointment will become vacant on the 1st March, 1942.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of three recent testimonials, should be sent to the MEDICAL OFFICER OF HEALTH, 22, Fisher-street, Carlisle, as early as possible.

Warwickshire and Coventry Joint
COMMITTEE FOR TUBERCULOSIS.

Applications are invited from qualified and registered medical practitioners, Men or Women, for the post of TEMPORARY ASSISTANT TUBERCULOSIS OFFICER. Male applicants must be ineligible for service in the Armed Forces. The person appointed must be prepared to devote the whole of his or her time to the duties of the office, and must have had experience in the diagnosis and treatment of tuberculosis.

The salary will be at the rate of £700 per annum, plus a cost-of-living bonus of £24 per annum, together with motor-car allowances in accordance with the Joint Committee's scale, and other reasonable travelling expenses.

Forms of application and statement of the duties and terms of the appointment can be obtained from the undersigned. Applications, marked "Temporary Assistant Tuberculosis Officer," with copies of not more than three recent testimonials, must be received by me not later than first post on Friday, the 20th February, 1942.

L. EDGAR STEPHENS, Clerk of the Joint Committee.

Shire Hall, Warwick.

The Royal Eastern Counties' Institution
FOR THE MENTALLY DEFECTIVE, COLCHESTER.

ASSISTANT MEDICAL OFFICER (MALE) (B1).

Applications are invited for the above post from duly qualified medical practitioners. Total Beds over 1700. Suitably qualified R practitioners holding B2 or B1 appointments are invited to apply.

The medical man appointed will be stationed at the Extension, Turner Village, which has at present 500 Beds.

The salary will be at the rate of £400 per annum, rising, subject to the Directors' approval, by £25 annually to £450 per annum, together with furnished apartments, board, laundry, and attendance. No deductions. Accommodation is available for a married man. Previous specialisation in Mental Deficiency not necessary.

There is a new and fully equipped laboratory.

Apply, giving age, nationality, full details of qualifications, and copies of testimonials, to the MEDICAL SUPERINTENDENT, Royal Institution, Colchester.

Royal United Hospital, Bath.

Applications are invited from registered medical practitioners (Male), including R practitioners within three months of qualification, for the following appointments, which become vacant on the dates stated:—

HOUSE SURGEON (A) (General Surgery and Ear, Nose, and Throat). 1st March.

HOUSE SURGEON (A) (General Surgery). 1st March.

Salaries at the rate of £150 per annum, with board, residence, and laundry. R practitioner appointments will be for a period of six months.

Applications (clearly indicating the post desired), stating age, qualifications, and experience, together with a copy of three testimonials, to reach the undersigned by 19th February, 1942.

J. LAWRENCE MEARS, Secretary-Superintendent.

20th January, 1942.

Rochdale Infirmary and Dispensary,
LANCS. (110 Beds.)

The Board of Management invites applications for the appointment of HOUSE SURGEON (A), appointment now vacant, including R practitioners within three months of qualification when appointment will be for a period of six months. Salary attached to the appointment is at the rate of £150 per annum, including board, residence, and laundry.

Applications, stating age, nationality, &c., together with copies of three recent testimonials, to be sent to the Secretary. The successful candidate must be a member of a Medical Defence Society. W. WYNNE, Secretary.

Infirmary Office, Rochdale.

Royal Cornwall Infirmary, Truro.
(285 Beds—3 Residents.)

Applications are invited from registered medical practitioners, Male and Female, for the appointment of a HOUSE PHYSICIAN (B2) in charge of the MEDICAL EYE, EAR, NOSE, AND THROAT DEPARTMENT, vacant 1st March, 1942. R practitioners who now hold A posts may apply when appointment will be limited to six months. The salary is at the rate of £200 per annum, with full residential emoluments.

Applications, stating age, qualifications with dates, nationality, and present post, and accompanied by copies of three recent testimonials, should be sent to—

W. E. GRENFELL, Honorary Secretary.

Truro, 24th January, 1942.

The Royal Hospital, Wolverhampton.
(Incorporated under Royal Charter.)
(310 Beds.)

Applications are invited for the post of RESIDENT SURGICAL OFFICER (B1). Salary £250 per annum. Experience in major surgery essential. The successful candidate must hold one of the higher qualifications in Surgery. Suitably qualified R practitioners holding B2 or B1 posts may apply.

Applications, with copies of testimonials, to be forwarded forthwith to— W. H. HARPER, House Governor.

City of Coventry.
TEMPORARY ASSISTANT MEDICAL OFFICER FOR CIVIL DEFENCE CASUALTY SERVICES.

Applications are invited from Male registered medical practitioners for the above post. The salary will be £700 per annum, plus war bonus. The appointment will be terminable by one month's notice on either side. The office will be a full-time one and the officer appointed will be under the direction of the Medical Officer of Health. The duties will mainly be to assist in the administration of the emergency casualty services, in central control work, and in shelter supervision.

Applications, stating age, qualifications, experience, and references, should reach the undersigned as soon as possible. Forms are not provided.

A. MASSEY, Medical Officer of Health.

The Council House, Coventry, 26th January, 1942.

Southend-on-Sea General Hospital.

Applications are invited from registered medical practitioners (Male) for the posts of—

CASUALTY OFFICER AND ANÆSTHETIST (A), for which R practitioners within three months of qualification may apply;

HOUSE SURGEON (B2), for which R practitioners holding A posts may apply.

Salary at the rate of £150 per annum, with full residential emoluments. The appointments are for six months, and become vacant on 16th February.

Applications, stating age, qualifications, nationality, and accompanied by copies of two recent testimonials, to be sent not later than 10th February to—

P. H. CONSTABLE, House Governor and Secretary.

Hull Corporation Health Department.
BEVERLEY ROAD HOSPITAL.

TEMPORARY ASSISTANT MEDICAL OFFICER (A).

Applications are invited from registered medical practitioners of either sex, who must be single and not more than forty years of age, for the above appointment. R practitioners within three months of qualification may apply when appointment will be for a period of six months; otherwise it will be for a period of one year. Salary £250 per annum, together with usual residential emoluments.

Application forms may be obtained from the MEDICAL OFFICER OF HEALTH, Guildhall, Hull, to whom they should be returned not later than 10 A.M. on Monday, the 16th February, 1942.

Leicester Royal Infirmary.
(950 Beds.)

(Six Months' Appointments.)

DEPUTY RESIDENT SURGICAL OFFICER AND CASUALTY OFFICER (B1). Salary £200 per annum.

RESIDENT MEDICAL OFFICER AND HOUSE PHYSICIAN (B1). Salary £200 per annum.

Suitably qualified R practitioners holding B2 or B1 posts may apply.

Two ANÆSTHETISTS (B2). Salary £150 per annum for first six months, £200 per annum for second six months, and £250 per annum for third six months.

HOUSE PHYSICIAN (B2). Salary £125 per annum.

R practitioners holding A posts may apply.

HOUSE PHYSICIAN (A). Salary £125 per annum.

Four HOUSE SURGEONS (A). Salary £125 per annum.

R practitioners within three months of qualification may apply.

With full residential emoluments.

Applications, stating age, nationality, qualifications with dates, experience, and details of previous appointments, if any, and accompanied by copies of three testimonials, should be sent to the HOUSE GOVERNOR AND SECRETARY on or before 12th February.

24th January, 1942.

Liverpool and District Hospital for
DISEASES OF THE HEART,
34, Oxford-street, LIVERPOOL, 7.

Applications are invited from registered medical practitioners (Male and Female), including R practitioners within three months of qualification, when appointment will be for a period of six months, for the appointment of a HOUSE PHYSICIAN (A). To commence immediately. Salary is at the rate of £100 per annum, with full residential emoluments. Facilities for M.D. thesis.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of three recent testimonials, should be sent to the undersigned.

Miss J. LEWIS, Secretary.

The Southampton Children's Hospital
AND DISPENSARY FOR WOMEN.

Applications are invited from registered medical practitioners, Female, for the appointment of a RESIDENT MEDICAL OFFICER (A), to become vacant on the 14th March. Salary is at the rate of £150 per annum, with full residential emoluments.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of three recent testimonials, should be sent not later than the 25th February to—

ELLA K. MATTHEWS, Secretary.

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City of Leeds.

PUBLIC HEALTH DEPARTMENT.

(AMENDED ADVERTISEMENT.)

Applications are invited from qualified and registered medical practitioners for the post of ASSISTANT MEDICAL OFFICER for Maternity and Child Welfare. Applicants must have had not less than three years' postgraduate experience, including experience in general medicine and surgery, and special experience in obstetrics and antenatal work, and in the treatment of children's diseases and diseases of women. Preference will be given to candidates possessing the D.P.H.

The commencing salary for the post will be not less than £600 per annum, and the present grading scheme of the Corporation provides for annual increments of £25 to a maximum of £700. In determining the commencing salary due consideration will be given to previous experience and qualifications. The first increment will take effect on the 1st April following the completion of twelve months' service.

The person appointed will be required to pass a medical examination and to contribute to the Superannuation Fund established under the Local Government Superannuation Act, 1937. The appointment will be terminable by one month's notice on either side.

Form of application and particulars as to the duties of the appointment may be obtained from the undersigned.

Applications, endorsed "Maternity and Child Welfare Officer," together with copies of three recent testimonials, must be delivered at the Health Department, 12, Market-buildings, Vicar-lane, Leeds, 1, not later than 10 A.M. on Monday, 23rd February, 1942.

Canvassing in any form, either directly or indirectly, will be a disqualification.

J. JOHNSTONE JERVIS, Medical Officer of Health.

City and County of the City of Exeter.

Applications are invited for the appointment of ASSISTANT MEDICAL OFFICER OF HEALTH (Woman) for the City and County of the City of Exeter at a salary of £500 per annum, rising by annual increments of £25 to a maximum of £700 per annum. The appointment is to the permanent staff of the Council, and the successful candidate will be required to pass a medical examination and to contribute to the Superannuation Fund.

The appointment may be determined by either party at any time by three months' notice in writing.

The main duties will be in connexion with the school medical and maternity and child welfare services of the Council, but the officer appointed will be required to undertake such other public health duties as may be allotted to her.

Canvassing, either directly or indirectly, will disqualify.

Applications, endorsed "Assistant Medical Officer of Health," accompanied by copies of three recent testimonials, must be received by me not later than the 18th February, 1942.

Application forms and particulars of the appointment may be obtained from: C. J. NEWMAN, Town Clerk.

10, Southernhay West, Exeter, 30th January, 1942.

City of Birmingham.

CITY INFECTIOUS DISEASES HOSPITAL, LITTLE BROMWICH. (750 Beds.)

Applications are invited from registered medical practitioners for a JUNIOR RESIDENT MEDICAL OFFICER (A) (Male or Female) at the above Hospital for the treatment of cases of infectious diseases. Salary at the rate of £300 per annum, with full residential emoluments. The appointment will be subject to one month's notice on either side. R practitioners within three months of qualification may apply when appointment will be for a period of six months.

Applications, stating age, experience, and qualifications, with copies of recent testimonials, should be forwarded to Dr. H. P. NEWSHOLME, Medical Officer of Health, Council House, Congreve-street, Birmingham, 3, not later than Thursday, 12th February, 1942.

Holland County Council.

Applications are invited from registered medical practitioners, Male or Female, for the temporary whole-time appointment of ASSISTANT MEDICAL OFFICER OF HEALTH. The officer appointed will be employed on general duties, including school inspections and welfare centres in connexion with the work of the Health Department, and supervision of a small E.M.S. Hospital, under the direction of the Medical Officer of Health. The appointment is subject to one month's notice on either side. Salary will be at the rate of £600 per annum, and car allowance will be paid on the Council's scale.

Applications, together with copies of three recent testimonials, should be sent to the Medical Officer of Health, County Hall, Boston, on or before Tuesday, 17th February, 1942.

H. C. MARRIS, Clerk of the County Council.

County Hall, Boston, 31st January, 1942.

Preston Royal Infirmary.

Applications are invited from registered medical practitioners (unmarried) for the appointment of HOUSE SURGEON (A). R practitioners within three months of qualification may apply when appointment will be for a period of six months. Salary at the rate of £150 per annum, with usual residential allowances.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copy testimonials, should be sent as soon as possible to—

JOHN GIBSON, Superintendent and Secretary.

Borough of Llanelly.

ASSISTANT (LADY) MEDICAL OFFICER OF HEALTH AND SCHOOL MEDICAL OFFICER.

The Town Council invite applications for the above whole-time appointment from duly qualified single Lady medical practitioners. Applicants must have had at least three years' experience in the medical profession and special experience in midwifery and child welfare work. Possession of the Diploma of Public Health will be an advantage.

Salary £500, increasing by annual increments of £25 to £700 per annum.

The officer will be required primarily to carry out duties relative to Maternity and Child Welfare and School Children, and any assigned work in connexion with the Medical Services of the Borough under the direction of the Medical Officer of Health.

The appointment is subject to the provisions of the Local Government Superannuation Act, 1937, and to the successful applicant passing a satisfactory medical examination.

Prescribed application forms may be obtained from the undersigned, and when sent in should be endorsed "Assistant Medical Officer" and addressed so as to be delivered on or before the 25th February, 1942, to

DAVID J. PHILLIPS, Town Clerk.

Town Hall, Llanelly, 3rd February, 1942.

West Suffolk General Hospital,

BURY ST. EDMUND'S. (424 Beds.)

Applications are invited from registered medical practitioners, including R practitioners within three months of qualification, for the appointment of HOUSE SURGEON (A), with care also of special departments. The appointment will be for a period of six months. Salary £150 per annum or according to experience, with full residential emoluments. Appointment to commence from 21st March, 1942.

Applications, stating age, qualifications with dates, nationality, and present post, and accompanied by three recent testimonials, should be sent immediately to: E. E. HARDWICKE, Secretary.

The Corbett Hospital, Stourbridge

(212 Beds),

AND SPECIALIST OUT-PATIENT DEPARTMENTS.

Applications are invited for the post of PATHOLOGICAL LABORATORY TECHNICIAN (Male) for General Hospital Clinical Laboratory which becomes vacant on 9th March. Applicant must hold the certificate of the P. and B.L.A.A. Salary £210–£225, according to experience, plus 10 per cent. superannuation and lunch.

Applications, giving details of experience, age, and stating position with regard to military service, together with copies of three testimonials, should be sent forthwith to—

W. G. H. WESTON, House Governor and Secretary.

Torbay Hospital, Torquay, Devon.

(223 Beds.)

HOUSE SURGEON (A) wanted for 1st March. R practitioners within three months of qualification may apply when appointment will be for a period of six months. Salary £125 per annum, with full residential emoluments.

Apply, giving age, nationality, qualifications, and testimonials, to the SECRETARY, Torbay Hospital, Torquay.

The Duchess of York Hospital

FOR BABIES, MANCHESTER, 19. (80 Cots.)

Applications are invited for the post of JUNIOR RESIDENT MEDICAL OFFICER (A), including R practitioners within three months of qualification, for six months from 1st April, 1942. Salary at the rate of £100 per annum, with full residential emoluments.

Applications, accompanied by copies of three recent testimonials, to be sent by 24th February, 1942, to—

LOUISE GILLESPIE, Secretary.

Woman Indoor Locum required for long term. Apply to Dr. MACILRATH, 4, Halesworth-road, S.E.13, stating age, nationality, religion, experience, type of practice used to, salary required, and when free.

Large Manufacturing Company in the Midlands requires full-time services of Male ASSISTANT MEDICAL OFFICER immediately. Applicants must be ineligible for military service and have had recent hospital experience, and preferably young. Commencing salary according to experience and qualifications, but not less than £600 per annum.—Address, No. 845, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

Doctor has Vacancy in his well- appointed home. Rest Cures, Convalescents, &c.—Address, No. 844, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

Suitable for Doctor or Dentist, large HOUSE, best part of Plumstead, comprising eight rooms and usual offices; garage. Recently occupied by Doctor. Reasonable rent for lease (seven years or duration).—Apply, R. J. LANG LTD., 6, Thomas-street, Woolwich (Tel. 0248).

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